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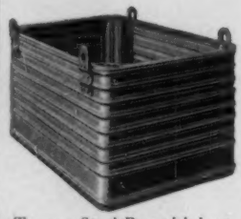

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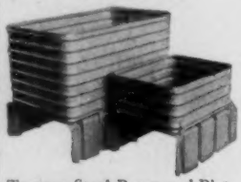

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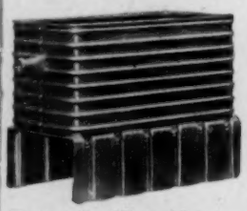

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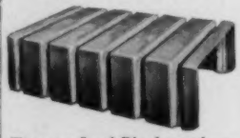

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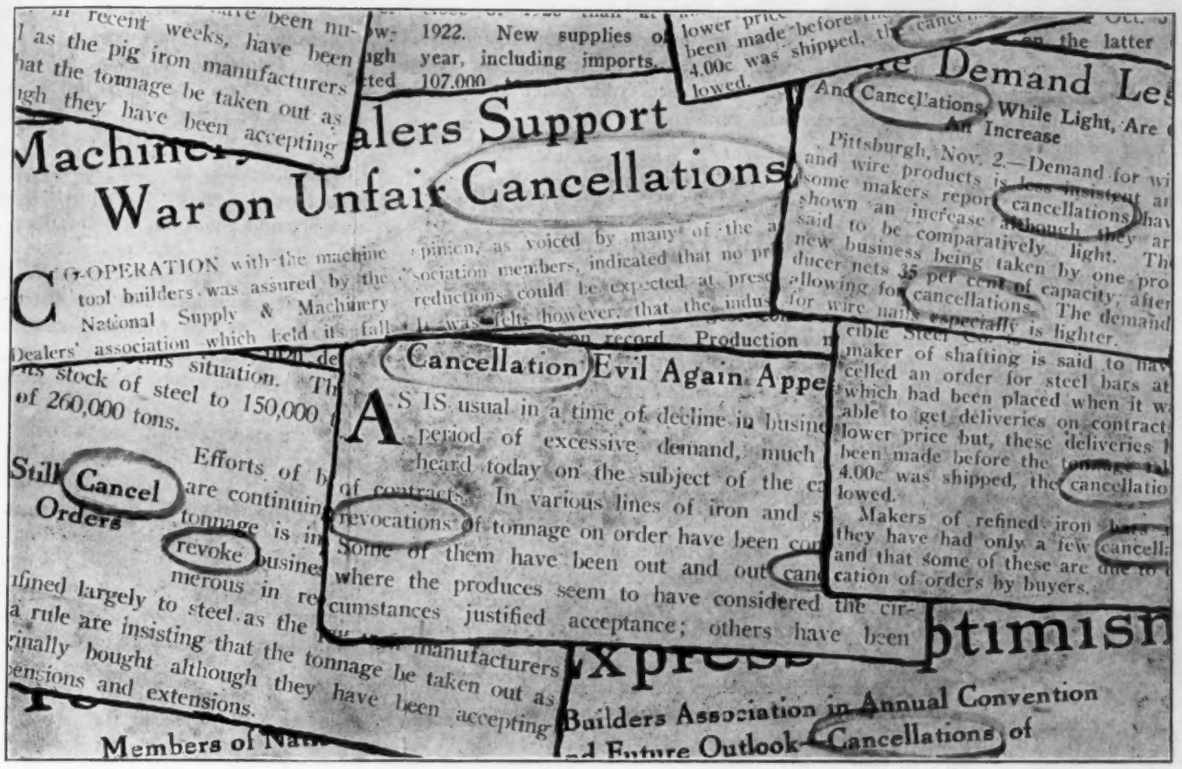
Volume LXXVI *No. 9*



Cancellation Evil Exacts Heavy Toll from Industry

By E. L. Shaner

OF ALL the inherent ills of modern business, none is more annoying or more difficult to remedy than that of cancellation of contract. Positioned as it is as the last link in the distribution chain, it offsets the efficiency of production, selling and delivery and interjects a thread of doubt and suspicion into the entire industrial fabric.

The cancellation evil is prevalent in a period of sharp deflation. Its most recent and perhaps most notorious visitation was in the latter part of 1920 when industry suffered its first serious post-war set-back. As late as July in that year consumers still were clamoring for more steel, castings, forgings and equipment than they could obtain. The situation also was aggravated by the breakdown of the railroad transportation system. As a result buyers were resorting to all sorts of expedients to insure an even flow of material to their plants. Orders were duplicated and even triplicated in the hope that at least one of them would be executed promptly. Their actual needs were multiplied by a factor of safety when orders were placed for fear the mills would ship only a part of the material or equipment specified.

The blow came in the fall, after the reckless buying policy had built up an amazing but dangerously fictitious demand. It was estimated that 30 per cent of the unfilled orders represented duplicated bookings for which there was no actual demand. Users of steel and metal products found themselves with a small volume of business but with large orders outstanding for raw and semi-finished materials. The easiest thing to do was to cancel, and most of them did it—usually by wire.

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This wholesale revoking of contracts soon spread hardship and disaster among manufacturers in all branches of industry. In the case of a few groups, such as the merchant pig iron producers, buyers were forced to honor their orders or extend the period of delivery, but as a rule the cancellations were effective.

While the immediate effect, as manifested in serious financial losses, demoralization of business, backing up of material, etc. was extremely serious, in the long run its influence probably was not as far reaching as the secondary or moral effect. The spectacle of American business men violating their pledges was witnessed by the entire country. Many of those who would have stood by their contracts on conscientious scruples lost faith in the wisdom of doing business honestly. "Why should we be penalized for our integrity?" they asked.

So the contract emerged from the chaos of deflation a much less esteemed instrument of business than ever. In a few cases unscrupulous persons even capitalized its low standing in their selling methods.

We know, by personal knowledge, of a salesman who called on one of his regular customers for the purpose of closing an expected order, but who was told by the purchasing agent that the contract had just been placed with a competitor.

"Oh, that's all right," replied the salesman, "an order is always cancellable. I think I can fix it so you can save some money by doing business with my firm. Your job, of course, is to look after the interests of your company. If you can save by taking our goods, why not cancel your order and sign up with me?"

The purchasing agent, who happened to be a spineless creature, fell for this argument. But not so the competing salesman. When he heard of the attempted cancellation, he firmly refused to abide by it. He not only prevailed in his insistence that the contract be fulfilled, but he gave his competitor a dressing down that will not soon be forgotten.

Fortunately the very seriousness of the cancellation problem helped speed its solution. Immediately after the experience of 1920 and 1921, industrial leaders began to see the need of making contracts inviolate. Many trade organizations formulated and adopted codes of business ethics in which cancellations were denounced as untenable. Much was done and still is being done to wipe out unfair practices, of which revocation of contracts is one of the most important.

While rapid deflation of country-wide scope is the most serious cause of cancellations, they sometimes can be traced to a single branch of industry where some peculiar phase of the business is responsible. This was true in the case of the automobile industry, which only a year or two ago held the unsavory reputation of being a flagrant violator of the sanctity of contracts.

This blemish on the name of the young and energetic industrial giant was brought about not so much by a wilful disregard of business pledges as it was by the expedients resulting from the faulty foundation of its distribution structure. At that time, too many automobile builders were putting the production cart before the consumption horse.

It was not unusual for a motor car builder to decide that his plant could turn out 100,000 machines in the next year. This fact having been determined, he advised his sales organization that 100,000 cars must be sold. With this ultimatum in mind, the salesmen and distributors set out to fill their quotas. High pressure methods were employed to move the cars at any cost. Long time payments, ridiculously high allowances for used cars in trade, and many other inducements were offered to facilitate sales. Everything short of criminal coercion was tried to force distributors to accept shipment for more cars than they had contracted for in a given month.

Then, after all of these artifices had failed to stimulate sales to the point needed to insure a 100,000 year, the management usually decided suddenly to curtail production. As this step probably was not taken until after a large stock of completed cars had accumulated on warehouse floors, the cut in output was drastic. The next move was to send telegrams to steel producers and parts makers to suspend shipments of material and to cancel orders.

In most cases this summary action precipitated a violent controversy in which the offended company attempted to obtain redress. Frequently adjustments were made that proved satisfactory to both parties of the contract, but in a number of cases, the company furnishing the material had to stand the loss. One method of avoiding settlement was for the automobile manufacturer to admit that the contract was legal and binding, but at the same time to insist that the cancellation be accepted unless the complainant was willing to be blacklisted when future orders were placed. When this threat failed, the motor car

Codes Define Status of Contracts

ONE avenue of hope for curtailing the cancellation evil is in the movement in which many trade organizations are participating to elevate standards of business practice. Scores of societies have adopted codes of business ethics, most of which include a provision for honoring contracts. The codes deal with cancellations in various ways, ranging from mere statements that contracts are to be honored under all circumstances to lengthy recommendations as to methods of avoiding the necessity of cancelling. The following excerpts from three codes are typical:

: : : : :

CONTRACTS and undertakings, written or oral, are to be performed in letter and in spirit. Changed conditions do not justify their cancellation without mutual consent.—*Paragraph VIII in Code of Ethics adopted by the Chamber of Commerce of the United States, May,* 1924.

: : : : :

THE pledged word upon which another relies is sacred among business gentlemen. The order for a bill of goods upon which the seller relies is the pledged word of a business man. No gentleman in business, without a reason that should be satisfactory to the seller, may cancel an order. He would not ask to be relieved of his obligation upon a note or check, and his contracts of purchase and sale should be equally binding. The technical defense that he has not bound himself in writing may avail him in the courts of law, but not of business ethics.—*Canon No. 5 of Commercial Ethics for Credit Men, adopted by the National Association of Credit Men.*

: : : : :

MERCHANDISE shipped on regular order should not be returned without permission from the seller. Such permission should not be requested after the lapse of a reasonable period, and in no case should such return shipment be made "freight collect."—*From Code of Business Ethics of the National Hardware Association.*

builder suggested that the cancelled material be shipped, but intimated that practically all of it would be rejected on the strength of some minor technical point. This trick usually worked, as more than one parts maker well know.

Fortunately this practice no longer is prevalent. Most of the car and truck manufacturers have learned a few fundamentals of distribution since the cancellation evil thrived in their ranks. They have adopted, or fast are coming to the idea of anticipating demand and then planning production to meet it. Apparently the fallacy of trying to dispose of all the cars the plant can produce is generally recognized.

Now that the business is on a saner basis, the attendant evils of improper distributing tactics have disappeared except in rare instances. Cancellations by automobile concerns are exceptions rather than the rule. The head of one important steel sales organization recently summed up the situation as follows:

"Something new and strange has come over the motor car builders. The old familiar 'off-again-on-again' policy has gone. They are studying their requirements for material more closely than ever before. They are buying intelligently. Better yet, they are living up to the letter of their contracts. From being our most troublesome group of customers, they have become one of our best."

The experience of the automobile industry seems to suggest one remedy of the cancellation situation; that is, removing the contributory causes. As pointed out previously, the stage for the general abrogation of contracts usually is set by some abnormal condition of the distribution system. Therefore, one of the first steps in wiping out the habit of cancelling is to clear the path between producer and consumer.

A second remedy lies in continuing and expanding the present efforts to elevate the standard of business practices. Industry now is penalized by the unethical acts of a small minority. The power of example, as furnished by trade organizations and others in adopting codes of ethics can be made a valuable weapon in discouraging sharp business methods such as cancellations.

Still a third way is to bring about a condition of such full understanding between buyers and sellers that the motive for cancelling is removed. This can be accomplished first by more accurately defining the responsibilities of purchasers and vendors. In recent years many organizations have formulated standard forms of contracts and have adopted rules which clearly explain the positions of the two parties.

Agreement between producers and consumers also can be effected by employing more intelligent methods of ordering. This plan has been evolved in the steel industry and is working so successfully that it is safe to say that at the present time orders on mill books more closely correspond to shipments than at any time in history.

Assume that a buyer orders in December 6000 tons of steel for the first quarter, 2000 tons to be delivered during each month. If on or before Dec. 31, when he specifies for January shipments, he learns that he will need only 1500 tons instead of 2000, he notifies the mill to that effect. The mill promptly drops the 500 tons from its book. On Jan. 31, and Feb. 28 the routine is repeated, the buying altering his specifications to conform more closely to his actual needs. This plan is much better than the old practice, by which the mill would have added the 500 tons not taken in January to February tonnage.

The new system is advantageous to the steel producer because it clears his books of fictitious orders. It helps the buyer by giving him a chance to revise his specifications monthly, instead of requiring him to forecast his requirements three months in advance. Under this arrangement the necessity of seeking relief through cancellations is largely removed.

Violation of contracts is part and parcel of the distribution problem. It is a result of poor distribution and at the same time is the cause of pyramiding distribution ills. Its elimination from American business not only will strengthen the economic structure of industry, but will pave the way for higher standards.

A SHORT time ago when certain motor car builders set their production schedules without considering the probable demand, it frequently became necessary to halt output on short notice to avoid flooding the market. This meant shutting off the supply of steel and parts, which in many cases was accomplished by cancelling orders. As a result the automobile industry gained an unwelcomed reputation as a flagrant violator of contracts. Fortunately improved methods of distribution have largely removed the conditions which invited cancellation. The tow of barges with automobiles destined for the southern states was taken at a time when poor railroad service encouraged duplication of orders, which was an added cause for cancelling.

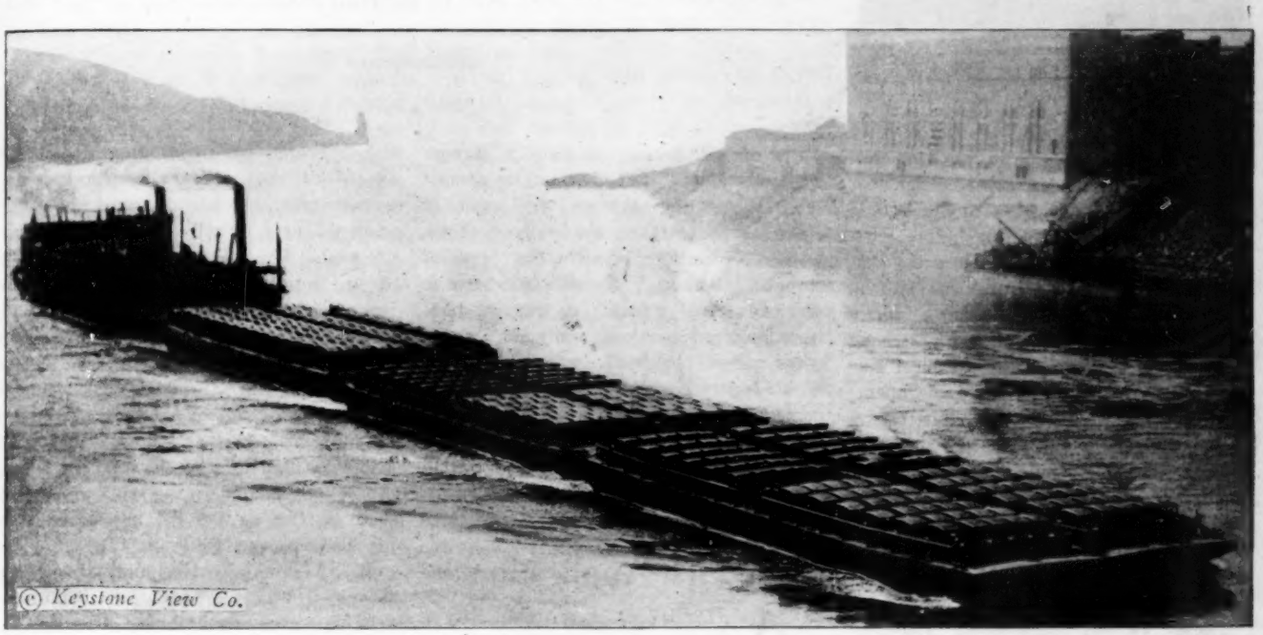

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Fig. 1—A 6800-pound, 0.40 carbon steel ingot being removed from the electrically heated soaking pit. The pit cover is lined with refractory brick

Soaking Pit Is Heated Electrically

First Unit To Be Installed Provides Interesting Data on Amount of Scaling and Power Required in Rolling Electric and Gas Heated Ingots

By T. F. Baily

ELECTRIC heating of soaking pits has been under consideration for more than 10 years and has been the subject of several papers before technical societies; but while on every occasion considerable interest was shown, it seldom went further than "where can we see one in operation?" Among those not familiar with the technical side of electric furnace design and operation, a belief existed that electrically-heated pits could not compete with gas-fired equipment. While it was conceded generally that electric pits would reduce the scale on the ingots, many were of the opinion that it was necessary to scale ingots heavily to produce a good surface on the bloom.

These various contentions remained somewhat open questions until the installation of an electric pit at the Donner Steel Co., Buffalo about a year ago. Since that time, several hundred ingots of both carbon and alloy steel have been put through this pit. Consequently, a comparison of electric-heated and gas-heated ingots is available.

The pit is of 150-kilowatt capacity with approximate outside dimensions of 8 feet wide, 9 feet long and 10 feet high, internal dimensions of 3 feet wide, 5 feet long and 8 feet deep and holds two 6800 or 7400-pound ingots. The electric heating is accomplished by means of carbon resistors, using crushed carbon of approximately ¼-inch mesh contained in troughs made of carbide of silicon. This type of resistor operates successfully at temperatures required in soaking pit practice. The proper input is controlled by special transformers having a number of voltage taps on the secondary, each tap giving a different kilowatt input to the furnace.

Resistor units are located in the side walls of the furnace in such a manner that the ingots cannot come in contact with them, the slap of the ingot in charging being taken by heavy firebrick walls projecting beyond the resistor troughs. Although the pit has been in service several months, no repairs have been required to these walls nor to the cover, whose brick is in perfect condition. Ingots have been heated to a temperature of 2350 degrees Fahr., or above, and at times for experimental purposes, furnace temperature of 2600 degrees Fahr. has been maintained without difficulty. Transformer equipment consists of a 150-kilowatt, 25-cycle, single-phase transformer, which sometimes was called upon to carry 50 per cent overload continuously. The meter equipment consists of an indicating wattmeter, a graphic recording wattmeter and a rare metal couple graphic recording pyrometer with the couple located in the cover of the pit directly above the ingots. Temperature readings were checked by a radiation pyrometer, which instrument also was used to take the temperature of the ingots going to the pit, when they were on the way to the mill after leaving the pit, and while they were in the mill. As the blooming mill was steam driven, it was not possible to obtain the relative power requirements in rolling between electric and gas-heated ingots, but the finishing mill was electrically-driven and the comparative results on rolling given in Table I, are taken on this mill.

Loss of metal due to scale was determined by means of an ingot scale located at the entrance of the blooming mill, ingots of both the gas and electric pits being weighed after stripping and before charging in the pits, after heating and before rolling, and finally after the fourth pass in the mill.

While, on account of plant conditions, it was not possible to operate the electric pit to the best advantage except on a few occasions, the power consumption for heating was well within the figures made before the equipment was installed. For instance, during November, 101 ingots of an average weight of 3.3 gross tons each were heated. During this period power was on the pit 624 hours, but ingots were in the pit only 92 hours, therefore the pit operated at only 15 per cent capacity. Under these conditions, the total power consumption

Is First Application

APPLICATION of electricity to another field of industrial heating recently has been made. This article describes the construction and operation of an electrical ingot soaking pit, together with tests conducted over the period of almost a year. For several years electrical pits have been considered, but since no installations existed, the discussion was limited to purely theoretical lines. Several notable points have been brought out in the tests. Ingots were heated to desired temperatures without difficulty, with economy and scaling seemed to be reduced. Rolling experiments indicated that a minimum of power was required, proving that heat penetration in the ingot had been thorough. The author of this discussion, which was presented before a recent meeting of the Association of Iron and Steel Electrical Engineers, is T. F. Baily of the Baily Furnace Co., Alliance, O.

was only 189 kilowatt-hours per gross ton of metal heated.

Taking average practice, however, between Nov. 16 and Dec. 2, charging the pit with power only during the time ingots were in the pit, the power consumption was 80.4 kilowatt-hours per gross ton of ingots heated. Two 3.3-ton ingots were heated at a time to an average temperature of 2316 degrees Fahr. The skin temperature of the ingots charged was 1660 degrees Fahr.

On account of mill conditions during the period mentioned it was necessary to hold the ingots in the pit on some occasions as long as 16 hours and 40 minutes, while under the best conditions the time in the pit was only 1 hour and 40 minutes. It was found that an average period of 2 hours was sufficient for ingots charged at a skin temperature of 1670 degrees Fahr. and heated to 2350 degrees Fahr.

Had it been possible to operate the pit continuously on a two hour soaking schedule, the power consumption would have been considerably under 75 kilowatt-hours per gross ton, as occasional daily operation showed power consumptions under this figure. It should be kept in mind that the heat loss through the walls of this small pit was large compared with the heating capacity of the pit, and that a full size pit of four 6 by 8 foot holes would show much better economy. From a careful check on the wall loss of this pit during the period of the 75 kilowatt-hours used for heating, approximately 30 kilowatt-hours were chargable to wall loss, leaving 45 kilowatt-hours as the heat actually required for the steel per gross ton. In a full size four-hole pit holding 24 ingots of 3.3 tons and operating on a similar heating period, the power chargeable to the wall loss per ton of ingots would not exceed 15 kilowatt-hours per gross ton when the ingots were charged at a skin temperature of 1670 degrees Fahr. and heated to 2350 degrees Fahr.

With a higher charging temperature of say 1850 degrees Fahr., which is possible on most steels, the power consumption should not exceed 45 kilowatt-hours per ton; and with ingots charged at 1670 degrees Fahr. and heated to only 2250 degrees Fahr., the power consumption should be under 50 kilowatt-hours per ton.

When heating cold ingots in a full size pit, using 6 hours as the heating time and heating to 2250 degrees Fahr., the capacity of the pit would be 10 tons per hour and the power consumption 330 kilowatt-hours per ton of ingots heated. This power consumption makes electric heating prohibitive from a cost standpoint on low grade steels; but on high priced alloy or high speed steel, the saving due to the reductions in scale loss may easily compensate for the higher cost of fuel or power for the electric pit. Since by far the largest tonnage of ingots are charged into the pits at temperature near 1670 degrees Fahr., the calculations of power consumption for full size pits are based on steel going into the pit with that temperature. These figures appear in Table II.

One of the most interesting features

(Concluded on Page 566)

Table I

Comparison of Power Required for Rolling Ingots

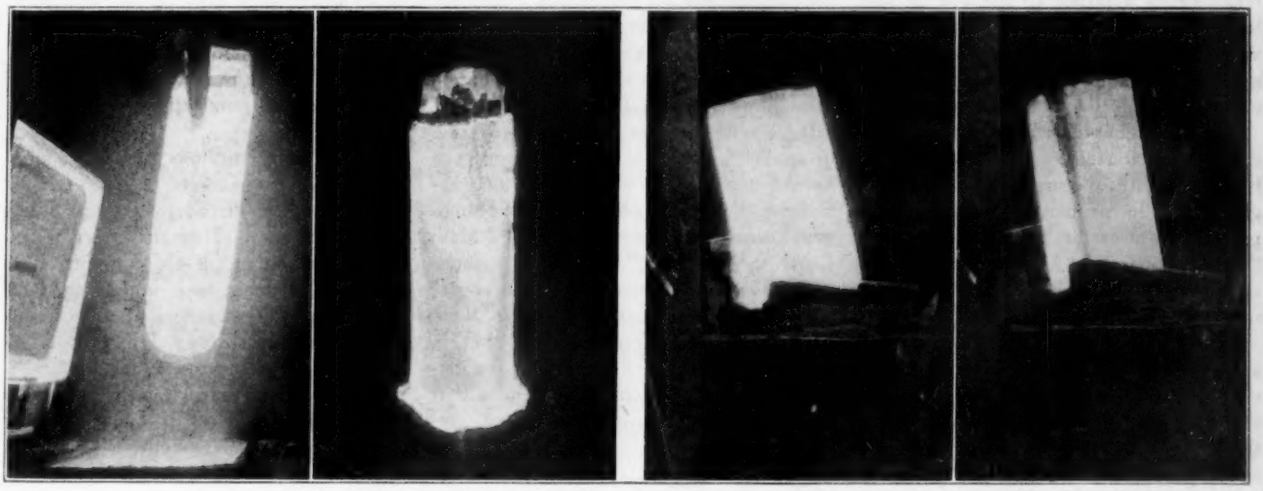
Method of heating	Temperature at fourth pass, degrees Fahr	Temperature at ninth pass, degrees Fahr.	Drop in temperature degrees Fahr.	Average difference in peak load, per cent	Average difference in kilowatt-hours, per cent
Electricity	2147	2091	56	9 less	25.8 less
Gas	2118	2049	69		

As indicated by the radiation pyrometer, at the beginning of rolling, the outsides of the ingots were approximately the same temperature.

Table II

Cost Data on Electric Soaking Pit

Ingots charged at 1670 degrees Fahr. Heated to 2350 degrees Fahr.	
60 kilowatt-hours at $0.006	$0.36
0.75 per cent scale at $40	.30
Renewals and upkeep	.10
Total per gross ton	$0.76
Ingots charged at 1670 degrees Fahr. Heated to 2250 degrees Fahr.	
50 kilowatt-hours at $0.006	$0.30
0.75 per cent scale at $30	.225
Renewals and upkeep	.10
Total per gross ton	$0.625
Ingots charged at 1850 degrees Fahr. Heated to 2350 degrees Fahr.	
45 kilowatt-hours at $0.008	$0.36
0.75 per cent scale at $30	.225
Renewals and upkeep	.10
Total per gross ton	$0.685
60 kilowatt-hours at $0.008	$0.48
0.75 per cent scale at $40	.30
Renewals and upkeep	.10
Total per gross ton	$0.88
60 kilowatt-hours at $0.01	$0.60
0.75 per cent scale at $30	.225
Renewals and upkeep	.10
Total per gross ton	$0.925
60 kilowatt-hours at $0.01125	$0.675
0.75 per cent scale at $30	.225
Renewals and upkeep	.10
Total per gross ton	$1.000
60 kilowatt-hours at $0.01	$0.60
0.75 per cent scale at $60	.45
Renewals and upkeep	.10
Total per gross ton	$1.15



FIGS. 2 AND 3 SHOW 7400-POUND CHROME-NICKEL STEEL INGOTS HEATED TO THE SAME TEMPERATURE, FIG. 2 BEING HEATED IN THE ELECTRICAL SOAKING PIT AND FIG. 3 IN THE GAS-FIRED PIT. FIGS. 4 AND 5 ARE VIEWS OF 6800-POUND CARBON STEEL INGOTS IN THE INGOT BUGGIES. BOTH WERE HEATED TO THE SAME TEMPERATURE, FIG. 4 BY ELECTRICITY AND FIG 5 BY GAS. IN BOTH CASES, THE PHOTOGRAPHS WERE TAKEN AFTER THE INGOTS HAD BEEN OUT OF THE PITS FOR EQUAL PERIODS OF TIME

Paying Dividends With Courtesy

Courtesy is a persuasive force;
Discourtesy is like dynamite.

Simplest, least expensive, yet
effective, promoter of trade.

"Our patrons always right" as
bad as "Public be damned."

Character will be known;
First of all by your Employes.

Courtesy personalizes business;
lifts it from cold, routine rut.

"It's the contact that counts!"
It may make or break a sale.

By A. J. Hain

YEARS ago in the old home there was a book with a title such as "Etiquette," or "Good Manners." The name is not recalled exactly because it always seemed, to a schoolboy, to be simply what it implied: "How To Behave." It occupied a place on the first shelf of the bookcase, alongside the great Bible. It was considered second only to that book in importance as a guide for personal conduct.

Among its chapters, first recalled, was one with the title "Specimens of letters appropriate for various occasions." They unfolded interesting, if sometimes distressing, features of domestic and business life. There were samples of letters "From a father to his son in college"; "Leters offering condolence to a widow"; "Letters proposing marriage", and "From the husbandman seeking credit."

One long chapter was devoted to the subject of courtesy. The text was illustrated with pictures of ladies and gentlemen in proper, almost painfully proper, postures for "The introduction"; "At the opera"; "At the dance", and similar occasions when some degree of refinement was deemed imperative.

The chapter created a lasting impression. It made it plain that to be a gentleman, to be truly courteous at all times, was a very desirable and exceptional attainment, something of which to be proud. Read it now, and smile! Exceptional, indeed, 25 years ago, but now the "accomplishment" is implanted as a democratic principle of conduct every day in nearly every home, school, workshop and office, everywhere, by word or example. No person is too ignorant or uncouth to understand and respond to the universal language of courtesy, and none so rich or powerful that he may disregard it.

* * *

ON THE same shelf at home was another book called "Science Record." It contained a collection of short articles. They outlined principles, but principles of a different sort. These were the principles of electricity, mechanics, astronomy, photography and similar subjects.

One article told of the discovery of the Hertzian wave, and commented on the possibility of its use as a means of communication without wires. Professor Langley's Aerodrome had fallen into the Potomac, but it was suggested that such trials might lead to the discovery of the principle of human flight. It was narrated elsewhere how Edison discovered, or applied a principle, in reproducing the human voice. One of the inventor's assistants, a German, on hearing the phonograph for the first time, cried "Mein Gott! She Speaks!" and fell in a faint.

Good reading from cover to cover; perhaps with "stretchers" in it, as Mark Twain said of "Tom Sawyer," but in the main an accurate account of the discovery of many scientific principles that since have had profound effect on civilization.

Now the point in recalling the two books is to emphasize the kinship of the two sets of principles. One dealt with physical laws, and the other with psychological, matters apparently far apart. Yet during the last 25 years amazing progress has been due to the practical application of both. There could be little advancement in one way without progression in the other. Scientific principles and their application are revolutionizing the mechanics of business, while courtesy, implying also honesty and good will, are refining its features.

The question is whether we have advanced as far in one field as in the other. Is courtesy a neglected factor, because it is the least spectacular?

* * *

COURTESY, as everyone knows, is a persuasive, constructive force, while discourtesy may be like dynamite. Courtesy individualizes business; personalizes it, lifts it out of cold, routine rut. It warms the hearts of buyers and sellers; loosens purse strings, encourages fair dealing.

Undoubtedly millions of dollars are lost every year directly or indirectly by those who are discourteous, and solely because of that. Human nature is extremely sensitive on this point. No group of business men understand this better than the managers of large hotels or department stores. However, aside from that, jumping from "the public-be-damned" attitude to "Our patrons are always right" is going too far.

Patrons themselves know they are not always right. To say that and to advertise it as a policy is to be unfair to oneself and discourteous to employes. A purchaser may have a super-consciousness of what is fair to him, in goods and personal consideration; but he is keen

A Business Outpost and Its Sentinel

IN THIS lobby office at the White Motor Co., Cleveland, "Lou" Dorn receives 250 to 300 business callers in a day. He probably knows by name and company more than 10,000 persons, aside from those of the home office, who have business dealings there. He is typical of thousands of tactful employes, whose personalities radiate and kindle courtesy, stationed at the outposts of our business institutions. Executives are raising the standards of those who thus represent them, as they have raised the standards of salesmen. They have discovered that courtesy pays dividends.

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On his way to the West last fall he stopped off to visit the plant from which he obtains his material; he wanted to meet the proprietors. He found the place, opened the door marked "Entrance," and was hemmed in by a very small, white-washed vestibule. On the doorway leading therefrom was a sign "Keep Out. This means You."

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The officials of one of the companies established a rule that no matter who called the person calling would have to be "on the wire" before one of them would answer. However, the other company made the same rule, "tit-for-tat." The president of one company must not be called to speak over the telephone unless the president or some other official of the other company is waiting at the phone; and vice versa, up and down the line of officials. Discourtesy, or even the suggestion of it, is almost certain to have a flareback.

* * *

A LARGE electrical company advertising a new product features the

Paying Dividends With Courtesy

Courtesy is a persuasive force;
Discourtesy is like dynamite.

Simplest, least expensive, yet
effective, promoter of trade.

"Our patrons always right" as
bad as "Public be damned."

Character will be known;
First of all by your Employes.

Courtesy personalizes business;
lifts it from cold, routine rut.

"It's the contact that counts!"
It may make or break a sale.

By A. J. Hain

YEARS ago in the old home there was a book with a title such as "Etiquette," or "Good Manners." The name is not recalled exactly because it always seemed, to a schoolboy, to be simply what it implied: "How To Behave." It occupied a place on the first shelf of the bookcase, alongside the great Bible. It was considered second only to that book in importance as a guide for personal conduct.

Among its chapters, first recalled, was one with the title "Specimens of letters appropriate for various occasions." They unfolded interesting, if sometimes distressing, features of domestic and business life. There were samples of letters "From a father to his son in college"; "Leters offering condolence to a widow"; "Letters proposing marriage", and "From the husbandman seeking credit."

One long chapter was devoted to the subject of courtesy. The text was illustrated with pictures of ladies and gentlemen in proper, almost painfully proper, postures for "The introduction"; "At the opera"; "At the dance", and similar occasions when some degree of refinement was deemed imperative.

The chapter created a lasting impression. It made it plain that to be a gentleman, to be truly courteous at all times, was a very desirable and exceptional attainment, something of which to be proud. Read it now, and smile! Exceptional, indeed, 25 years ago, but now the "accomplishment" is implanted as a democratic principle of conduct every day in nearly every home, school, workshop and office, everywhere, by word or example. No person is too ignorant or uncouth to understand and respond to the universal language of courtesy, and none so rich or powerful that he may disregard it.

* * *

ON THE same shelf at home was another book called "Science Record." It contained a collection of short articles. They outlined principles, but principles of a different sort. These were the principles of electricity, mechanics, astronomy, photography and similar subjects.

One article told of the discovery of the Hertzian wave, and commented on the possibility of its use as a means of communication without wires. Professor Langley's Aerodrome had fallen into the Potomac, but it was suggested that such trials might lead to the discovery of the principle of human flight. It was narrated elsewhere how Edison discovered, or applied a principle, in reproducing the human voice. One of the inventor's assistants, a German, on hearing the phonograph for the first time, cried "Mein Gott! She Speaks!" and fell in a faint.

Good reading from cover to cover; perhaps with "stretchers" in it, as Mark Twain said of "Tom Sawyer," but in the main an accurate account of the discovery of many scientific principles that since have had profound effect on civilization.

Now the point in recalling the two books is to emphasize the kinship of the two sets of principles. One dealt with physical laws, and the other with psychological, matters apparently far apart. Yet during the last 25 years amazing progress has been due to the practical application of both. There could be little advancement in one way without progression in the other. Scientific principles and their application are revolutionizing the mechanics of business, while courtesy, implying also honesty and good will, are refining its features.

The question is whether we have advanced as far in one field as in the other. Is courtesy a neglected factor, because it is the least spectacular?

* * *

COURTESY, as everyone knows, is a persuasive, constructive force, while discourtesy may be like dynamite. Courtesy individualizes business; personalizes it, lifts it out of cold, routine rut. It warms the hearts of buyers and sellers; loosens purse strings, encourages fair dealing.

Undoubtedly millions of dollars are lost every year directly or indirectly by those who are discourteous, and solely because of that. Human nature is extremely sensitive on this point. No group of business men understand this better than the managers of large hotels or department stores. However, aside from that, jumping from "the public-be-damned" attitude to "Our patrons are always right" is going too far.

Patrons themselves know they are not always right. To say that and to advertise it as a policy is to be unfair to oneself and discourteous to employes. A purchaser may have a super-consciousness of what is fair to him, in goods and personal consideration; but he is keen

to sense the "overplay," and the superficial courtesy. A few days ago the the manager of a castings company called on the official of a pig iron company to purchase a substantial tonnage of iron. The merchant was cordial; the price was satisfactory, and the buyer departed with the understanding the contract was to be mailed to him. Five minutes later he thought of a minor detail pertaining to deliveries, and he wanted to verify his impressions. He stepped to a telephone and called the merchant's office. "I would like to speak with Mr. Jones," he said. He did not realize how inaccessible Mr. Jones could be.

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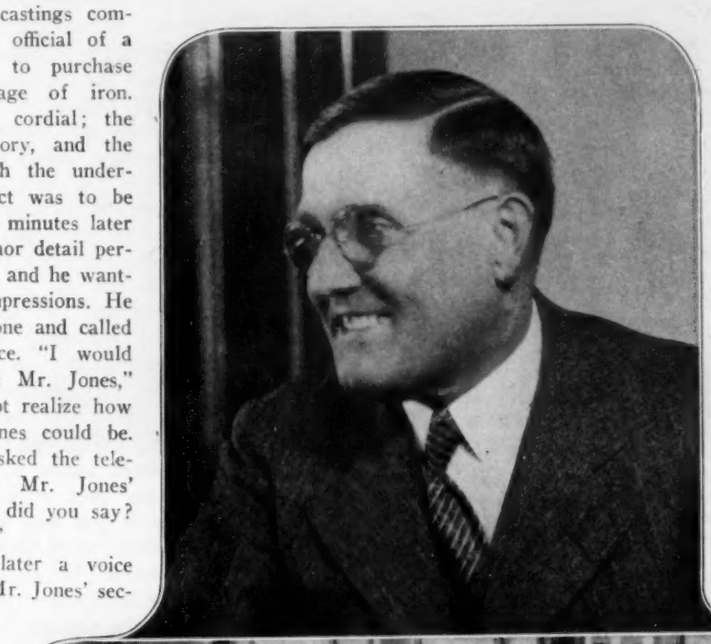

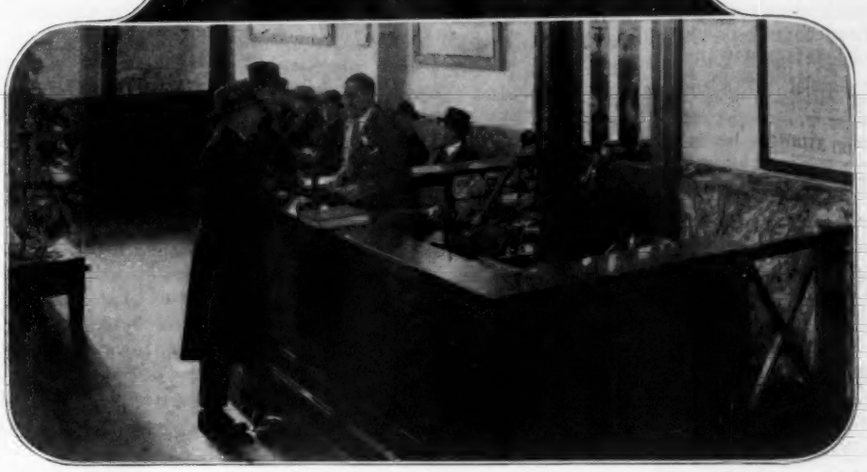

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slogan "It's the contact that counts," meaning, of course, that the electrical contact in the device can be relied on. This should be courtesy's slogan; because personal contact very often is the test and the index of integrity in business.

One of the largest business organizations in the world is the United States Steel Corp., and therefore it may be interesting to know how callers are received at the office of the chairman, E. H. Gary. This reference is not made to challenge comparison, because courtesy is by no means confined to one man or organization. This is merely a sidelight, and it is supplied by a correspondent who frequently has business with that office, and who writes personally as follows:

"There are no excuses or misleading statements at Judge Gary's office. Everyone who calls there is received promptly and gets a courteous hearing. If the visitor's request is at all reasonable it it complied with. If Judge Gary does not want to reply to questions asked, he frankly says so. For instance, if he does not want to speak on a certain question, they do not tell you that Judge Gary is out or in conference, or otherwise tied up; but they tell you definitely and frankly that he does not want to talk on the subject. It is the same way with Judge Gary personally. When he answers a question or makes a statement you can bank on what he says, and there is not much use in reading between the lines, and trying to find some hidden meaning, because you likely are going to be fooled.

"The effect of this policy is far-reaching..A feeling of friendliness and confidence has been built up which must be a tremendous asset to the Steel corporation....."

The number of persons to call at the various offices of the Steel corporation's subsidiaries runs into many thousands a day. One may appreciate from this what the single factor, prompt and courteous reception, may mean for it.

That executives are devoting attention to the subject of courtesy is indicated in many ways. A card issued to the trade recently by the Sharon Steel Hoop Co., Sharon, Pa., sums it all up in a paragraph:

A corporation may spread itself over the whole world, and may employ a hundred thousand men; but the average person will usually form his judgment of it through his contact with one individual. If this person is rude or inefficient, it will take a lot of kindness and efficiency to overcome the bad impression. Every member of an organization who in any capacity comes in contact with the public is a salesman, and the impression he makes is an advertisement good or bad.

* * *

THE underlying thought of the motive impelling executives to raise the standards of courtesy in the outposts of their offices is this:

"All of us have something to sell, or we wouldn't be in business. We must have contact with other companies and other companies must have contact with us. What may we rightfully expect from the other fellows; if we do not treat their representatives with the same degree of courtesy and respect that we desire of them."

And that is the spirit that is spreading the gospel of courtesy. It's good business.

Furnace Operators in February Meeting

Successful operation of a blast furnace when using either beehive or by-product coke were outlined by J. S. Fraser, blast furnace manager for the Trumbull-Cliffs Furnace Co., at the February meeting of the Eastern States Blast Furnace and Coke Oven association held at the William Penn hotel Feb. 19. With charts, Mr. Fraser graphically showed the results achieved under given sets of circumstances and conditions.

Approximately 170 members and guests were present, and 18 new members were elected, bringing the total to 186. President L. E. Riddle, general superintendent of the city blast furnaces, Carnegie Steel Co., Pittsburgh, presided. Other officers present were Vice President D. M. Rugg, superintendent of the Donner-Hanna Coke Corp., Buffalo, and Secretary-Treasurer H. E. McDonnell, superintendent of blast furnaces, Weirton Steel Co., Weirton, W. Va.

The next meeting will be held in May at a time and place to be decided upon later, possibly at the Country club, Harrisburg, Pa. Attendants at the February meeting came from as far west as Chicago, as far east as Philadelphia, and from Wheeling on the south and Buffalo on the north.

New Use Developed for Steel Floor Plates

Four steel producers in this country now are manufacturing so-called diamond floor plates. They are the Carnegie Steel Co., Pittsburgh, Alan Wood Iron & Steel Co., Conshohocken, Pa., Lukens Steel Co., Coatesville, Pa., and the Central Iron & Steel Co., Harrisburg, Pa. The latter company began the manufacture of these floor plates about the middle of 1924. These floor plates are used extensively in the construction of stairways, platforms and treads in boiler rooms and power plants and for numerous other purposes. A new use recently developed for this product and which is showing considerable growth is in road and bridge construction. The plates are placed where the traffic is found the heaviest.

Soaking Pit Is Heated by Electricity

(*Concluded from Page 563*)

of the test on the electric pit was the determination of metal loss in scale. Both electric and gas-heated ingots were weighed before charging into the pits and after the fourth pass in the mill. The average loss of electric heated ingots was 0.75 per cent, and on gas ingots substantially 1.75 per cent. The scale loss on electric ingots seemed to be about the same regardless of the time the ingot was in the pit, an indication that this 0.75 per cent loss was caused by the air striking the ingot after stripping and before charging into the pit. In the case of the gas-heated ingots, the scale increased as the time in the pit was increased. While the record of loss on the gas-heated ingots in this case was only 1.75 per cent, it is believed that this figure is too low for average practice, as records taken from a number of other installations of gas-heated pits indicate that a scale loss of 2.75 per cent is more nearly the average loss.

The difference in scale is best shown by Figs. 2, 3, 4 and 5. Fig. 2 shows a 7400-pound chrome-nickel ingot heated in the electric pit. Fig. 3 shows an ingot of the same heat heated in the gas pit, the photograph being taken at the same number of seconds after the ingot was removed from the pit as was the view of the electric ingot. Both ingots were heated to approximately 2350 degrees Fahr. Fig. 4 shows a 6800-pound carbon ingot heated in the electric pit, and Fig. 5 an ingot of the same heat put through the gas pit. Fig. 1 shows the top of the electric pit with the cover open and an ingot being removed from the top.

Power Required in Rolling

Since ingots from the electric pit could be and were heated to the desired rolling temperature, and perhaps were more evenly heated throughout, the power required for rolling electric ingots was less than for gas ingots heated to the same skin temperature, and it was noted also that the peak load on the mill was less when rolling electric ingots than when rolling ingots heated in the gas pits. It will be noted that in Table I the average peak load demand was 9 per cent less for electric ingots than for the gas heated ingots, and that the kilowatt-hours per ton for rolling electric ingots was 25.8 per cent less than for the gas-heated ingots. This can be accounted for best by the assumption that the electric ingots were more evenly and thoroughly heated, which is borne out by the temperature readings in Table I, which shows that there was less drop in temperature of the electric ingots between the fourth and ninth passes.

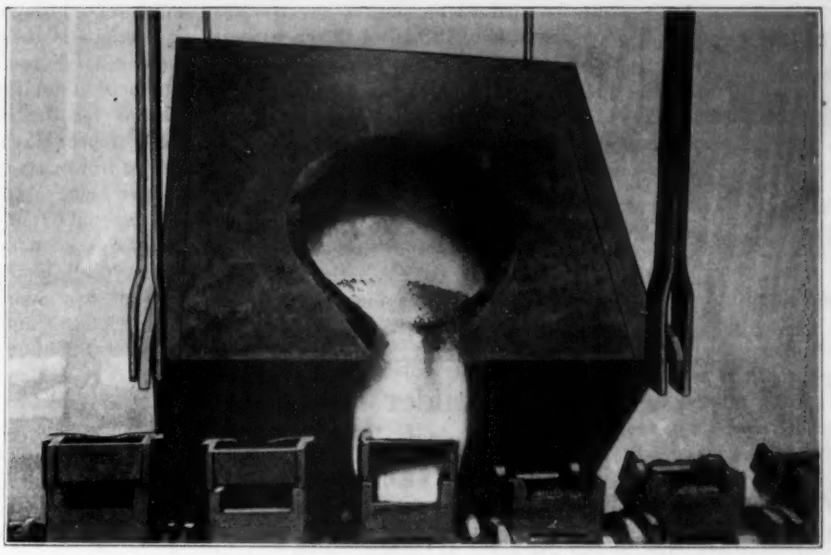


Fig. 1—When Melting Is Completed, the Furnace May Be Lifted and Poured Directly

A Charge of 600 Pounds of Copper Has Been Melted in the Crucible Under Charcoal

Melting with High Frequency

Induction Furnace Designed to Meet Special Problems

By Dudley Willcox

HIGH frequency currents have been applied to melting and heat treating operations on a laboratory scale for seven or eight years. Commercial installations have been made for producing alloys of nickel-iron, gold-platinum, osmium-iridium and other metals which require high temperatures, freedom from contamination and thorough mixing. High frequency furnaces also are used commercially for melting metals of the tungsten group in graphite containers for producing carbides.

The principle of these furnaces is that of a transformer in which the primary is a coil of copper conductor and the secondary is a mass of conducting material within the coil. The high frequency furnace may have a bath in the form of a cylinder which has small radiating surface for a given volume. The metal bath may be contained in an ordinary crucible. The current does not heat the coil much above room temperature, but the mass within the coil is rapidly heated to the melting point and higher, if desired. The metal is stirred by electro-magnetic forces assuming thorough mixing of alloys.

The usual form of high frequency current converter consists of a reactance, a step-up transformer, a special form of discharge gap, and a bank of condensers. Current from 60 cycle power lines is changed to oscillatory current having a frequency which is the natural period of the furnace circuit.

Fig. 2 shows a high frequency furnace operated from a rotary high frequency generator. Fig. 3 shows the generator driven by a steam turbine operating with 10 pounds steam pressure. A bank of condensers shown at the right of Fig. 3 serves to correct the power factor of the furnace circuit. In place of the steam turbine an oversize synchronous motor to drive the generator may be used to correct the power factor.

The furnace illustrated has been used for melting nickel-silver and copper, and the stirring effect is pronounced as in the case of small furnaces operated with oscillatory current. About 600 pounds of copper can be melted in a little over

The author is with the Ajax Electrothermic Corp., Trenton, N. J.

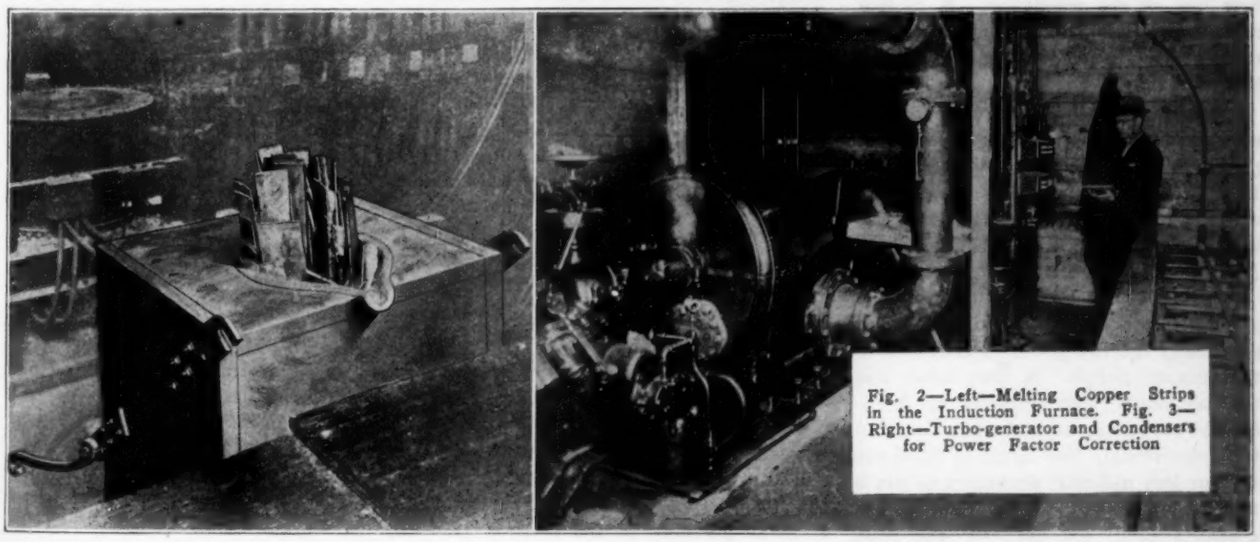


Fig. 2—Left—Melting Copper Strips in the Induction Furnace. Fig. 3—Right—Turbo-generator and Condensers for Power Factor Correction

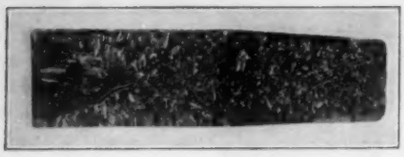


FIG. 4—ETCHED SECTION OF 225 POUND INGOT OF NICKEL-IRON ALLOY MADE IN A HIGH FREQUENCY FURNACE

an hour with a power input of about 100 kilowatts.

Fig. 1 shows the furnace containing molten copper being poured into a series of iron molds. The power can be applied during pouring if necessary to keep the contents at the proper pouring temperature. The heat shown was melted under a covering of charcoal.

The data shown in the accompanying table are interesting as comparisons of the efficiency of the furnace in melting different materials and different forms of material. In the first four cases the material was charged in the form of scrap pressed into *cabbages* and some loose scrap. The fifth melt recorded consisted only of copper strips as illustrated in Fig. 2. The sixth melt was of a solid lump of nickel-silver which had been allowed to freeze in the crucible over night. It will be noted that the efficiency in this last case was somewhat better than when cabbaged nickel-silver was melted as recorded in the first line of the tabulation. A molten mass may solidify in the crucible and be re-melted without cracking or injuring the crucible.

Comparative Data on High Frequency Melting

Crucible	Metal	Pounds	Kilowatt rate	Time of melting hour	minutes	Total KW-H. consumed	Lbs. per KW-H.
Cold	Nickel-Silver	636	90.1	1	49	163.8	3.98
Hot	Nickel-Silver	636	92.8	1	18.6	121.8	5.23
Cold	Common Brass	636	99	1	04	105.5	6.02
Hot	Common Brass	636	99.5	..	43	71.3	8.9
Hot	Copper	636	100	1	09	115	5.53
Cold*	Nickel-Silver	600	84.9	1	22	115.70	5.19

*(Data on last line taken by E. F. Northrup. Metal in solid lump at start).

Another interesting high frequency furnace installation was made recently at the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This company is melting nickel-iron and silicon-iron alloys in 225 pound lots—operating the furnaces from a 5000 cycle generator, driven by a direct current motor. The generator is rated at 100 kilowatts and practically the full power is delivered to the furnace circuit. A melt takes less than an hour. The necessity for keeping the carbon content of their alloys to the astonishingly low figure of 0.006 per cent or less makes it necessary to use a non-carbonaceous crucible. The Zicon crucibles used, last only for one heat, but the cost of melting is nevertheless considered low. Some of the melting is done under a vacuum and some under hydrogen.

An etched section of an ingot of nickel-iron alloy weighing 225 pounds is shown in Fig. 4. Not the least interesting feature of the production is that the ingots are not cropped. It will be observed that the ingot has a flat top. While there are a few shrinkage holes near the top they are found to weld on forging and the entire ingot is rolled.

Tool Builder Removes Second Plant

Removal of its Newton Machine Tool Works from Philadelphia to Rochester, N. Y., is announced by the Consolidated Machine Tool Corp. which has its general offices at Rochester. Increased efficiency which will result from the consolidation through combining the organizations of these plants and the consequent large reduction of expense by eliminating duplications are given as reasons for the change. Just recently the Colburn Machine Tool Works was moved from Cleveland to Rochester, the change being accomplished without any material interruption in production and with large economies in operation.

The Consolidated corporation consists of five divisions; three of which, Bets, Colburn and Newton, will be located at Rochester; the Hilles & Jones Works at Wilmington, Del.; and the Modern Works at Erie, Pa. Encouraging reports on business conditions are given out by the corporation. The Hilles & Jones Works at Wilmington has increased its working force materially on account of an increased amount of business, particularly from plate and structural shops. The Modern Works at Erie has more business in small tools than it has had in any similar period since the consolidation. The Rochester Works is enlarging its facilities and is adding to its shop force.

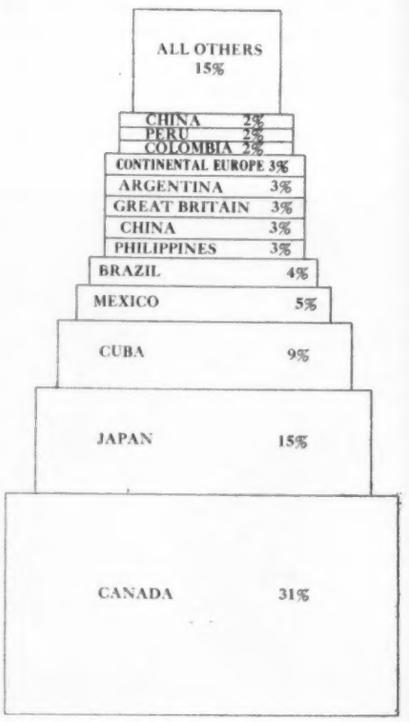
Institute Meet in May

The annual meeting of the British Iron and Steel institute will be held Thursday and Friday, May 7 and 8 at the house of the Institution of Civil Engineers, Great George street, London.

Where U. S. Steel Went in 1924

SIXTY-FIVE per cent of the steel exports of the United States in the first 11 months of 1924 stayed on the American Continents, according to the iron and steel division of the department of commerce. Sales to foreign markets fell off 2 per cent from the proportion established for the corresponding period of 1923. Shipments to the Far East amounted to 25 per cent of the exports for the first 11 months of 1924 and the same period of 1923. Australian, Indian and Japanese markets shrank in relative importance but these were counterbalanced by increases in sales to China and the Phillipine islands. Japan took 15 per cent of the exports in the 1924 period. European business totaled 6 per cent of the total exportation, with the United Kingdom and Ireland taking half of that.

Canada maintained its position as the largest importer of United States iron and steel, taking 31 per cent of the tonnage shipped. This is a decline from 39 per cent of the total in 1923.



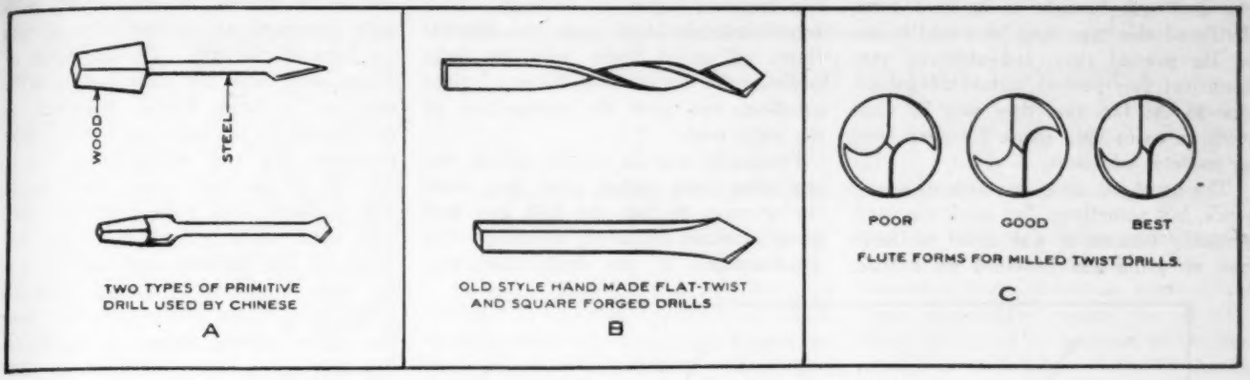


Fig. 1—Types of early tools for drilling holes and forms of drills

Improving Modern Twist Drills

The Story of Evolution of Metal Drills Is One of Constant Refinement of Quality of Steel, Improvements in Form of Drill and Changes in Cutting Angle

By Bruce W. Benedict and W. Penn Lukens

BECAUSE practice governing the cutting of metals is a vital factor in the problem of increasing production in modern manufacturing, the engineering experiment station of the University of Illinois has planned a series of investigations of the design and performance of metal working tools. Preliminary work on the first investigation, which deals with twist drills, has been completed and the results are set forth in Bulletin No. 103, "An Investigation of Twist Drills" by Bruce W. Benedict and W. Penn Lukens. The tests, which were made on relatively soft gray iron, provide an abundance of confirmatory and definite data on the influence of the helix and clearance angles, as well as of other drill characteristics.

Appendix I of the report affords such a straightforward outline of the development of twist drills with a discussion of the principal factors affecting their performance that it is abstracted in the accompanying article.

TO PRODUCE holes in hard materials seems to have been one of the early needs of the human race, since evidences are found of many early and crude devices for drilling Almost invariably the primitive drill took the form of a sharp iron or stone point attached to a wooden shaft. The drilling action of this device was one of scraping or crushing rather than of true cutting. The motion was imparted directly by rolling the wooden shaft between the palms of the hands or indirectly through the medium of a bow or a stick-and-string arrangement. In any case the motion was a reciprocating one, and the whole process required patience and care. The usual requirement was to produce a hole in wood, but not infrequently the pump and bow drills were used in operations on glass, stone, and crockery. Among a few tribes was found a heavy two-man drill capable of piercing iron.

The direct progenitor of the present twist drill was the old style flat drill, made usually of carbon steel in a blacksmith shop and shaped according to the ideas of the maker. Such a drill could usually be forged in a few minutes. A length of square stock was flattened at one end and given a rough diamond shape, possibly with the edges turned over a bit to form a sort of hooked lip and then by means of a file or grindstone, the cutting lips and point were sharpened and

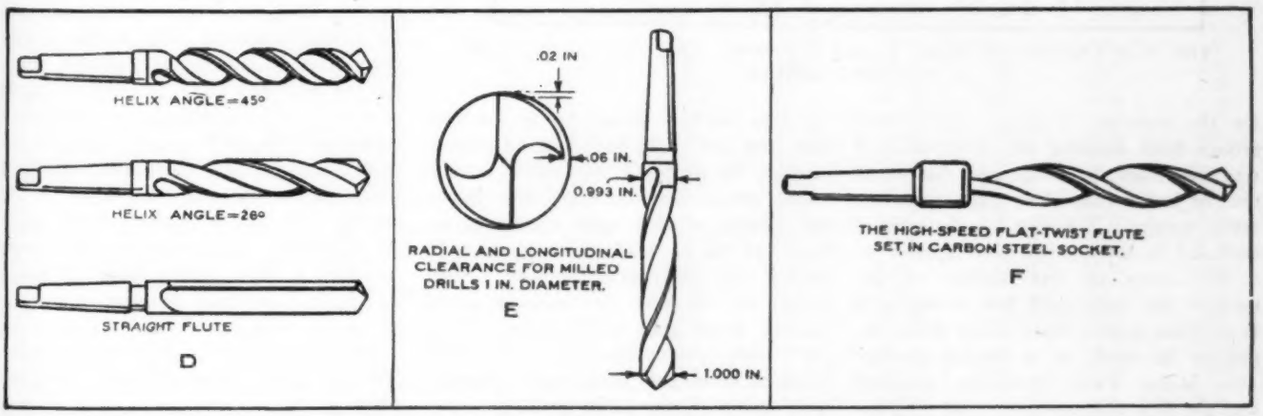


FIG. 2—IMPORTANT CHARACTERISTICS OF TWIST DRILLS

the drill was brought to its final form. Drills of this type may be found in use at the present time, and although very inefficient they possess certain advantages due to the fact that they may be made with an extra long shank for deep holes or made in odd sizes.

The usual flat drill was made of square stock, but sometimes flat stock was used, probably because it was easier to forge and to grind and provided more space for the disposal of chips. Then some artisan tried twisting the drill while it was hot from the forge and discovered that he had a tool which gave noticeably better service. The idea of the twisted drill led in time to the development of a tool more or less similar to the modern flat twist drill, but it was still in a crude state. Only when drills began to be made as a special product (the Morse Twist Drill Co. in 1862 was the first manufacturer), did they assume any uniformity of design or attain any real degree of efficiency. Then experimentation began with the different forms of milled flutes, with the helix angle of the flutes, with forms of point grinding, and with the composition of the steel used.

Practically only in the last decade has any other than carbon steel been used, but previous to that the drill had been given a certain uniformity of design. The disadvantages of the drills used previous to the last decade lay in the fact that they had to be kept cool to prevent drawing the temper; this condition in turn meant either that the drill had to be run slowly or that some special provision had to be made for supplying a cooling and lubricating medium. Such a tool did not meet the requirements of modern large and rapid production so after high speed steels had proved their value in lathe and planer tools, attempts were made to use twist drills.

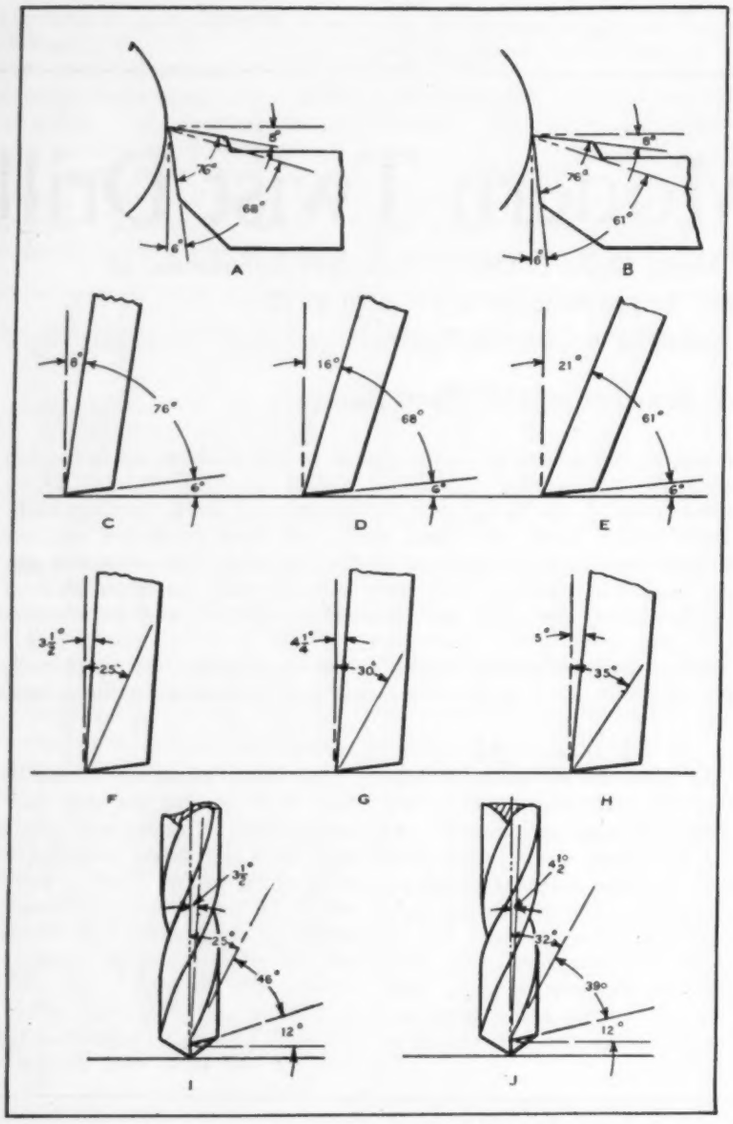


FIG. 3—STANDARD CUTTING TOOLS SHOWING THE CLEARANCE AND CUTTING ANGLES

Twist drills of high-speed steel are still in the process of development, both with references to the metals used and the form of the drill. The principles of design determined for carbon steel drills have to a large extent governed in the making of the high-speed drill. Experiments are still necessary to establish the proper helix angle, flute space, web thickness, and point grinding. The steel used varies according to the formulas of the different drill makers. It has been determined by analysis that the composition varies widely and that even the carbon content shows no regularity. The carbon content varies from 0.25 to 0.60 per cent, manganese from 0.25 to 0.60 per cent, chromium from 0 to 5.0 per cent, tungsten from 10.0 to 20.0 per cent, and cobalt, vanadium, and silicon, etc. within narrow limits according to the ideas of the different steel and drill makers.

This matter of the most desirable alloy has not been thoroughly investigated. Even at the present stage of the development, however, the advantages of the high-speed drill are apparent especially where rapid production necessitates high speeds and heavy feeds.

Two Cutting Lips Provided

The modern drill consists of a straight metal shank carrying at one end two equal cutting lips and at the other some means of attaching the drill to a device which will impart the necessary rotary motion to it. The earlier types of drills were simple affairs, as may be seen by reference to Fig. 1, with the lips usually so shaped that a reciprocating rotary motion could be used.

The form of flutes necessary to give best results is still a subject for discussion, various manufacturers using different forms. Three forms of flute are shown in *C*. The requirements are that this space shall shape the chips to a compact helix when drilling steel and that it shall afford adequate space for their disposal. Usually the milling cutters are so shaped that in connection with a 118-degree included point angle the cutting lip will be a straight edge. Apparently there is no reason to believe that the straight cutting edge is more efficient than a convex or concave edge, but the sentiment in favor of the straight edge is firmly established. Practice with regard to the helix angle also varies within certain limits ,there being standard drills with a uniform helix angle of 20 degrees and others with a helix angle of 32 degrees. General practice seems to favor a drill with a helix of about 25 degrees, sometimes uniform from tang to point and sometimes varying from 20 degrees at the tang to 25 at the point. The theory of this variable or "increase" twist is that it provides a greater chip space at the tang, where this space would

otherwise be decreased by the increasing thickness of the web. Drills for work in brass or similar soft material give best results when the drill flute is straight (helix angle equals zero degrees), as shown in Fig. 2. In fact it is logical to suppose that this helix angle could well have different values according to the material worked, just as the grinding angles used for lathe tools operating on steel are different from those used on cast iron. *D* in Fig. 2 shows the straight flute drill, the standard 25 or 26-degree drill, and a special drill having a helix angle of 45 degrees.

The workmanship on modern twist drills is of a high order, and it is not unusual to find the cutting diameters guaranteed to within 0.005 inch, but this diameter is true for only a small portion of the drill. Back of each advancing edge the drill may be concentric for a tenth of an inch, at which point the radial clearance begins, ranging from 0.01 to 0.05 inch. Usually this clearance is eccentric as shown in *E*, and is produced by milling or grinding with the drill slightly off center. The drill has also a longitudinal clearance to prevent its binding in deep holes.

Composition of High-Speed Steels

With few exceptions the primary metal of all high-speed steels is iron, and since the ultimate cost of the steel is high by reason of the alloys used, the best grades of iron, low in sulphur and phosphorus, are used. Carbon was for a long time the principal alloy used, and the product was known as steel, soft steel, hard steel, carbon steel, or tool steel according to the variation in carbon content. Although steel has been in use for many centuries, it was not until 1860 that alloys other than carbon were used intelligently in its production. Previous to that time the famous Damascus steels are known to have contained tungsten, nickel, and possibly manganese, although these were present in a natural alloyed ore and were not added by the makers. In 1860 Robert Mushet discovered that the addition of tungsten and manganese in fairly large percentages would produce a tool steel hard enough for use without the usual quenching processes but needed only to be cooled in the air. Steels of this composition are known as "self hardening," or "air hardening" steels and were the immediate progenitors of the modern high-speed steels. Since 1880, much experimenting has been done in ascertaining the effect on steel of adding such substances as tungsten, chromium, manganese, silicon, vanadium, cobalt, and even copper, and aluminum. The possibility of so many alloys in so many percentages and the peculiarities produced by variations in the forging and heat treatment open a wide field for investigation.

Analyses of Typical English Tool Steels

C	Si	Mn	W	Cr	V	Mo
0.60	0.30	0.04	14.62	3.58	1.04	0.54
0.064	0.00	0.00	14.76	4.27	1.00	1.22
0.063	0.00	0.16	17.77	2.51	0.95	0.00

It is true that there is still much to be done in investigating the effect of alloys on steel, but enough has been done to warrant certain definite statements. Taylor, in 1907, laid down certain rules for composition and treatment for lathe tools which still are generally followed. He recommended a low manganese content, a carbon content of not more than 0.86 per cent, about 6 per cent chromium, 19 per cent tungsten, low silicon and less than one per cent vanadium. His rules for heat treatment were:

1. Heat slowly to 1500 degrees Fahr.
2. Heat rapidly from that temperature to just below the melting point.
3. Cool rapidly to below 1550 degrees.
4. Cool rapidly or slowly to room temperature.
5. Reheat to 1150 degrees for about five minutes.
6. Cool to room temperature rapidly or slowly.

He further stated that this treatment would apply to any high-speed steel and that the method of obtaining these temperatures was of small importance, provided only that they could be determined with exactness and that the tool was not allowed to oxidize. A fresh coal fire was recommended for the initial heating and a lead bath for the reheating. More recent writers suggest gas muffle furnaces for the initial heating and salt baths for tempering.

That Taylor's formula may not hold for twist drills is suggested by some of the later investigators. In drills the conditions are such as to call for slightly different qualities in the metal, notably a greater toughness and strength. This logically leads to a lower percentage of carbon. Other considerations lead to a somewhat lower chromium content, and recent experiments suggest the use of a cobalt alloy and an increase in the percentage of vanadium. C. A. H. Lantsberry suggests as the result of a study of a series of drill tests a steel containing not more than 14 per cent tungsten, about 4 per cent chromium, 1 per cent vanadium, and carbon less than 0.60 per cent. Analyses of a number of stock American drills as determined by Norris of the Westinghouse Electric & Mfg. Co., in 1911, are given in the accompanying table. These analyses show both the wide variation of values for the different variables and the tendency toward a low carbon and chromium content. The generally larger manganese content is noticeable, giving, according to Lantsberry, a greater hardness and a resistance to fire-cracking or cracks in hardening.

Lantsberry gives analyses of three of the most satisfactory of the English tool steels in the accompanying table. The chemical composition of the steel is, however, not the only factor which affects its performance, even when the heat treatments are identical. It has been established that the forging processes may be regulated to give a harder and tougher product. For this reason forged flute drills and many flat twist drills give better results than milled drills; thus of the drills analyzed by Norris the low tungsten drill *T* gave greater endurance than drill *E* both being milled drills, but drill *I*, also a high tungsten drill of forged flute design, was practically as good as drill *T*.

Analyses of 22 American Stock Drills

Drill	C	Si	S	P	Mn	W	Cr
A	0.48	0.20	0.014	0.010	0.40	15.86	3.46
B	0.41	trace	0.017	trace	0.57	17.29	3.24
C	0.41	trace	0.012	0.015	0.50	17.84	3.12
D	0.25	0.19	0.014	trace	0.50	16.18	3.05
E	0.38	0.05	0.010	0.012	0.28	19.98	4.95
F	0.43	0.32	0.012	0.018	0.27	15.80	2.28
G	0.49	0.19	0.018	0.012	0.28	19.45	2.89
H	0.44	0.14	0.016	trace	0.32	15.54	3.14
I	0.24	trace	0.023	0.012	0.27	19.43	4.07
J	0.48	0.14	0.017	0.037	0.21	13.88	2.96
K	0.46	trace	0.010	0.025	0.50	14.98	2.65
L	0.32	trace	0.018	0.045	0.35	18.00	3.05
M	0.45	0.09	0.015	0.017	0.55	17.80	2.89
N	0.54	trace	0.014	0.015	0.28	19.43	3.10
O	0.44	0.09	0.015	0.012	0.52	17.76	2.90
P	0.57	0.48	0.017	0.020	0.60	13.50	4.08
Q	0.43	0.19	0.018	0.038	0.28	19.51	3.00
R	0.49	0.10	0.019	0.015	0.48	18.79	4.70
S	0.55	trace	0.012	0.017	0.48	18.95	3.01
T	0.41	0.19	0.011	0.037	0.34	10.31	3.20
U	0.45	0.19	0.015	0.017	0.55	17.84	2.88
W	0.49	0.09	0.010	0.032	0.24	18.39	2.35

The Authority of Industry

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Cancellation Not a Dead Issue

ALTHOUGH little has been said during the past year about revocation of contracts, it is not safe to assume that the problem of cancellations is dead. Conditions in industry now present few causes for canceling orders. Buying is on a more conservative and perhaps more intelligent basis than usual and excellent transportation facilities give purchasers assurance of prompt deliveries. Yet in spite of these favorable conditions occasional cancellations are reported, indicating that not all buyers recognize the importance of fulfilling contracts.

But what would happen if industry were to go through another experience such as that of 1920 and 1921, when sharp deflation followed a period of pyramided demand? If such a situation should arise five or ten years from now, would manufacturers resort to wholesale cancellations as they did in October and November in 1920?

The answer lies largely in the developments of the next few years. From the low esteem to which it descended in 1920, the contract now has been elevated to a fair state of inviolability. This recovery has been helped by the action of trade organizations and individual manufacturers in adopting codes of ethics which uphold the sanctity of contracts. Relations between producers and consumers are improving, due to a more widespread recognition of the importance of the distribution problem. Thanks to upsets suffered in the past five years, most manufacturers are conducting business more cautiously than for many years.

Industrial leaders should continue to work for higher principles in business conduct. Only by constantly applying the power of good example can the small minority who practice unwarranted cancellation be convinced of their error. If the executive mind can be trained to regard a business pledge as irrevocable, industry will have little to fear when the next crisis tempts cancellations.

Winning Power Through Ownership

WITH the offering to the public of a majority of the common stock of the world's largest meat packing interest, it becomes increasingly patent it is the United States and not Russia that is undergoing something of an economic revolution. The railroads, the public utilities, the great industrials like United States Steel Corporation, all have a wide stock distribution. In many, employe participation is being encouraged. The larger utilities are fostering customer-ownership. The American workman and salaried man is becoming dominant economically by peaceful penetration, in contrast to the bloody and self-frustrating methods of the Russian communists. As he acquires his interest he is becoming educated in the modes and manners of business, the best insurance against abuse of his growing power.

Turning Waste Into Wealth

EVER since Secretary Hoover undertook the task of eliminating waste in industry, the results of his work have been accumulating until now the savings are of great magnitude. In talking before the American Engineering council recently, Mr. Hoover stated that although the department of commerce had spent only $100,000 a year in its campaign, reform in correcting wasteful practices in industry had brought about savings of more than $600,000,000 annually.

Much of Mr. Hoover's effort has been devoted to standardization of sizes and varieties, and in overcoming waste effort. More recently the government has given attention to the conservation of resources in the soil, such as oil. It is to be hoped that such conserva-

tion efforts will become the subject of major attention. Waste of timber lands, waste of by-products in the beehive coking oven, waste of helium gas, waste of oil and many other wastes can be eliminated. In eliminating such wastes there is a wonderful opportunity to prolong indefinitely the industrial supremacy of the United States.

Changing Tendencies in Building

A GLANCE at the figures of building construction for January reveals one striking fact. This is that the tendency is for residential building to decline, compared with the tremendous activities for that class of construction one year ago, while commercial building is coming to the front. All building is a little less active than it was at the start of 1924. Total awards in 27 states, reported by F. W. Dodge, in January amounted to 42,341,600 square feet. This was a loss of 15 per cent from January 1924. Residential construction declined 35 per cent, while industrial awards were 25 per cent greater.

The record of values shows the changing trend in another way. In January 1924 the proportion of residential construction was 56 per cent of the whole, while commercial and industrial buildings accounted for only 21 per cent. In January 1925 residential building had dropped to 43 per cent of all construction awards, while commercial and industrial structures had climbed to 29 per cent. No other conclusion is possible than that the housing shortage has grown less acute, while business recovery is creating an increasing demand for buildings for commerce.

Will Industry Form Into States?

THE editor of a magazine of the semi-popular type is quoted as saying in an address "Within 25 years this country will be divided into industrial states instead of being divided geographically into states like Ohio and Pennsylvania. The textile industry will be one state, and the coal industry another . . ."

The only interpretation that can be given this statement is that we will change the official boundary lines of our states to coincide with the predominence of industries. Youngstown and Pittsburgh being within 70 miles of one another, and being centers of the iron and steel industry, presumably would be in one of the new states.

We have heard of those industries being in a state of prosperity, or depression, and even discord, but could not conceive of them being in one state all by themselves.

We suspect some one has been dreaming dreams and seeing the bogey of "industrialism" and perhaps "feudalism" as it appeared years ago when superstitious fancies were more common than they are today. Industry never will be segregated and regulated, aided, or hampered, in this country by merely changing political boundary lines of states; not in 25 years or 125 years.

Scrap Is Trade Variable

SCRAP has long been regarded as an important index to the trend of business in iron and steel. The stimulation of scrap after a prolonged dullness, is generally regarded as a sign of better times ahead. Yet, when operations reach a high rate, an unsettled condition in scrap often prevails. Such has been the case for the past month or so. This leads to the conjecture in various quarters if conditions in the steel industry are not as good as generally assumed, or if an early drop in mill schedules is not likely. Neither is necessarily the case. In times of high operations, many mills resort to duplexing, or the use of hot metal instead of scrap. While this method is more expensive, it speeds up production and scrap consumption falls. This, of course, is to be regarded as just one factor, but one sometimes lost sight of. Consequently, while of significance, the movement of scrap is not always to be interpeted too literally.

Unpaid Wages Bring Tribute

REPORTS that the Illinois Steel Co. is taking over at Gary some 17,000 idle Indiana coal miners have proved unfounded but serve to direct attention once more to the artificial wage basis which levies tribute on all consumers of coal. Common labor in Chicago district steel mills receives about 44 cents an hour, while unskilled mine labor is paid 92 cents. The mine laborer is lucky to get in half time. In an average year at both Gary and the coal mines, unskilled labor probably receives the same total but the steel worker and his family have been housed more comfortably and been freer from the spector of unemployment and want. The buyer of coal, however, pays this 92-cent rate, and not a yearly average, on every ton he buys. One remedy is to absorb in other industries the nation's 200,000 surplus of coal miners, but few employers want to take over men inoculated with the part-time and holiday virus and possessing a state of mind approving their union's tactics at Herrin.

Traffic Climbs To New Heights

DURING the first six weeks of 1925 loadings of revenue freight in this country, have exceeded those for the corresponding period of 1924 by 179,000 cars. The increase was 3⅜ per cent. Compared with the same weeks of 1923 the gain was 5¾ per cent; compared with 1920 it was 11¼ per cent. Thus it is seen that traffic this year has climbed to new heights. That is in accordance with forecasts as well as with the movement after previous industrial reactions such as appeared in 1924. These setbacks usually are

followed by a period of record breaking traffic, reflecting the replenishment of exhausted stocks of goods in many lines. That seems to be what is happening now. Evidence is appearing in some industries that the process of refilling stocks is near completion and that continued large scale production and distribution will depend upon the level of consumption. Just what that is to be will be better defined shortly as spring demand develops.

Close Buying and Good Buying

IN THESE highly competitive days nobody can afford to pay more than the market price for any commodity. Everybody is out to buy their raw material as cheaply as possible and sell their finished products for as much as they can. Organized efforts to lower the price of raw materials have been and are being conducted in the present market. Trade associations for instance, are sending out letters to members, suggesting that purchasing agents be instructed not to buy pig iron for second quarter unless at $2 below the prevailing market. A similar suggestion is being issued on coal.

There is a happy medium for efforts of this sort and it is up to the executives of the companies so approached to decide where that lies. Else they may find they will be impaled by their own aggressiveness—their own market will be slumping, their customers too, will inaugurate a buyers' strike until the manufactured articles are reduced, and they may find their last state worse than the first. Manufacturers cannot hope to lower the cost of their various raw materials and retain that advantage; their customers are not asleep and will want some of the advantage at least. The purchasing agent who studies not only his buying but his selling markets knows there is a point beyond which it is unprofitable to proceed.

Zinc Output Runs High

PRODUCTION of slab zinc in January, both by the electrolytic and smelter processes, total 50,386 tons. Production by the electrolytic process was 7350 tons, indicating a smelter production of 43,000 tons. During the month an average of about 86,000 retorts operated, so a fair idea can be gained as to the capacity per retort, which has been a more or less mooted question. On the basis of the January showing, the output per month per retort was about 1000 pounds or slightly over 32 pounds a day. This figure marks a better rate per retort than usually is estimated and this efficiency may have contributed to the fact that the January slab zinc output was the largest in the peacetime history of the industry.

What Our Readers Are Thinking

"Mr. Eberling" True To Life

To THE EDITOR—

I HAVE read with interest the very interesting article upon "Improved Distribution" in IRON TRADE REVIEW. The experience of Mr. Eberling is a replica of almost every undertaking I have had during the past 25 years of expediting, covering mainly large structural steel contracts and in some cases machinery and other constructional lines. If I may be bold enough to make a suggestion, you have not covered, what my experience leads me to believe one of the most vital points; that, the lack of basic information to proceed in an orderly manner to prosecute fabrication and delivery.

W. A. VANDERVORT, Expediter.

Pittsburgh, Feb. 18

* * *

Airplane Growth Needs Organization

ALTHOUGH America leads the world today in aircraft designing and construction and our New York City to San Francisco air mail flies more miles per day than do all the European air lines combined and is the only air line operating both day and night on a regular schedule, no attempt has been made in America to commercialize the engineering knowledge and organizing ability that the country possesses. —*W. B. Stout, president, Stout Metal Airplane Co., Detroit.*

* * *

Divergent Interests Need Adjusting

IT IS foolish to deny a divergence of interest between employers and employes. Every dispute over wages illustrates it. The need is to establish some means of adjusting these divergent claims without the wasteful conflict by which the power of each side is tested and the issue decided in favor of the stronger.—*Mary Van Kleeck, director of department of industrial studies, Russell Sage foundation, New York.*

* * *

Country Still on High Price Level

AS A country, we are still operating on a very high price level, with labor well employed and at high wages. There is also a high average purchasing power on the part of the people generally, all of which would seem to point to a period of prosperity, and especially if our railroads maintain a normal volume of purchases—*E. B. Leigh, President, Chicago Railway Equipment Co.*

* * *

Believes in Educating the Masses

EVERYTHING that is done or said in favor of better and still better education is a step toward God and country and humanity. In self-defense, for the protection of life and health and happiness the people must be educated.—*E. H. Gary.*

* * *

Working Overtime Has Drawback

THE man who has continuously to work overtime is a poor executive. Any reduction in the payroll resulting thereby is counterbalanced many times by the loss in his own efficiency.—*Charles Piez, Chairman, Link-Belt Co.*

The Reader's Page

Vol. LXXVI, No. 9 IRON TRADE REVIEW Feb. 26, 1925

How Cancellations Affect Distribution

IN THIS issue IRON TRADE REVIEW presents the fourth of a series of articles dealing with the general subject of distribution of materials and manufactured commodities. The present article relates to cancellation of orders, and how this is tied up with distribution. Unfortunately for the producers of some important raw materials and finished products contracts are not always inviolate, and this has been known to create considerable dissatisfaction to manufacturers and confusion in the trade. The frequency with which cancellations developed in 1920 led to the coining of the word "Cancelitis." Cancelitis then appeared in its most virulent form, but industry never has been entirely freed from it. It persists to a certain extent in all of the leading industries, but as pointed out in the article, buyers and sellers have learned to regard contracts more generally as obligatory; business consciousness on this subject is beginning to assert itself. Whether the improvement is temporary only can be determined when there is another period of depression. Cancellations, however, do not all come in periods of reaction. Some buyers have been known to overestimate their requirements and then to ask for cancellation, refuse to accept what they bargained for, or delay deliveries, from one quarter to another, throwing the burden on the sellers. This has a widespread effect on distribution, and it is from this standpoint that the problem is analyzed in the article beginning on page 559.

Paying Dividends With Courtesy. See Page 564.

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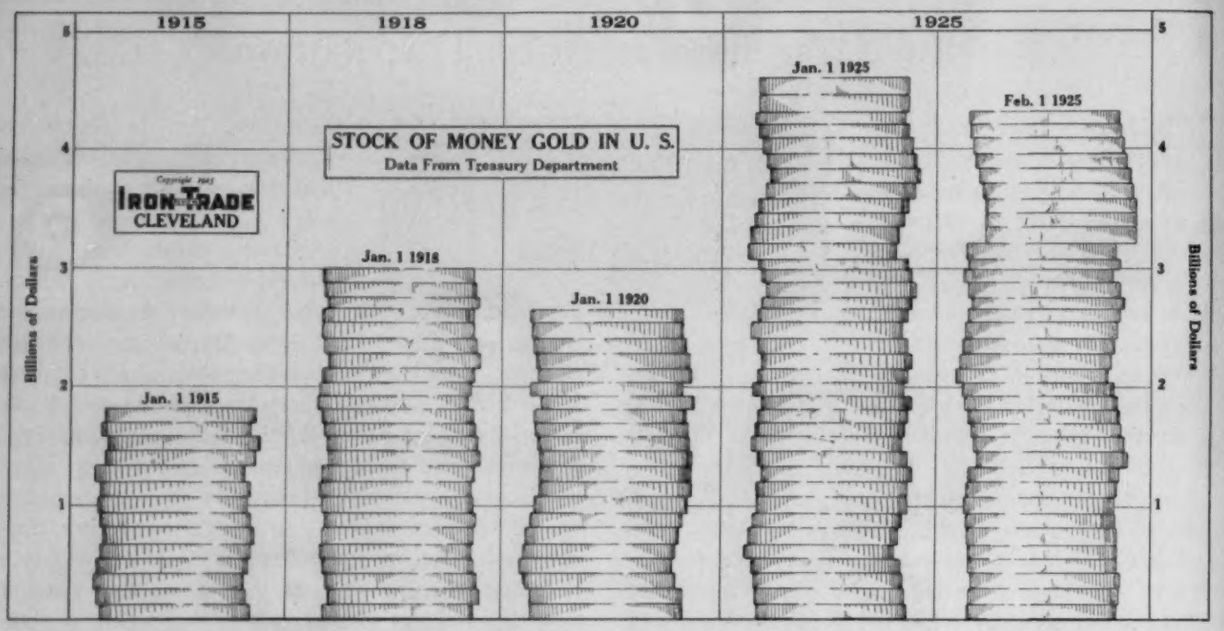
The Business Trend



Industry Awaits Spring Stimulation

BY JOHN W. HILL, Financial Editor.

INDUSTRY has reached a fork in the road. Production of iron and steel and a few other basic industries has been rushing forward rapidly. Acceleration came from buying induced by three incentives. These were: (1) To make up depleted stocks; (2) to get under the wire of low prices; and (3) to lay in supplies of material in anticipation of greatly expanded consumption of goods. Meanwhile, finished products, due to seasonal relaxation and cautious purchasing have lagged.

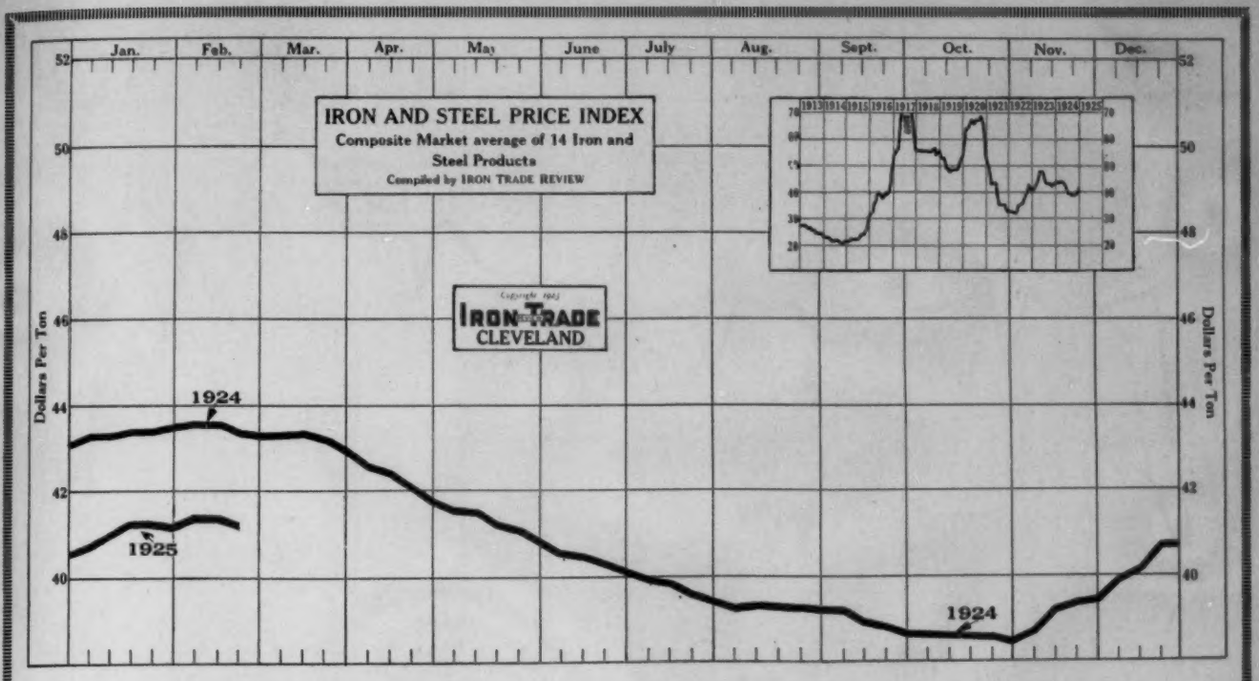
THE time has now come when consumptive demand must measure up to expectations or production must taper off. In other words basic outputs have sped ahead of consumption, just as last summer they fell in arrears. This has been particularly true of iron and steel. Exhausted stocks have been largely refilled. The immediate outlook, therefore, depends upon spring activities.

PRODUCTION under present favorable labor and transportation conditions and more or less persistent hand-to-mouth buying, is more delicately responsive to demand. For that reason outputs are now a trifle slower in some iron and steel centers. Both producers and users are awaiting definite signs of probable demand. The boom psychology has disappeared and the bogie of recklessness on the part of exuberantly confident business men is not now present. Possibly the conservatism of the moment is just what is needed to give balance to the situation.

UNQUESTIONABLY in some lines needs are accumulating. These may come upon the market with a rush, bolstering up outputs and prices for some time. The most probable source of new buying is the automobile trade. Motor car output has been cut down to 1922 levels. It is being held at the level of actual demand, in contrast with one year ago when there was dizzy overproduction. If spring weather germinates anything like a normal demand for new cars, an increase in outputs and in demand for material, is certain.

ALL in all the spring months continue promising for trade. For the moment a more sober tone pervades industry as well as the speculative markets. One reason for this is found in the continued large exports of gold which will tend to stiffen money rates, curb speculative excesses, and make more remote the threatened gold inflation. The chart at the top of this page shows how gold exports are causing money gold stocks to dwindle.

The Business Trend

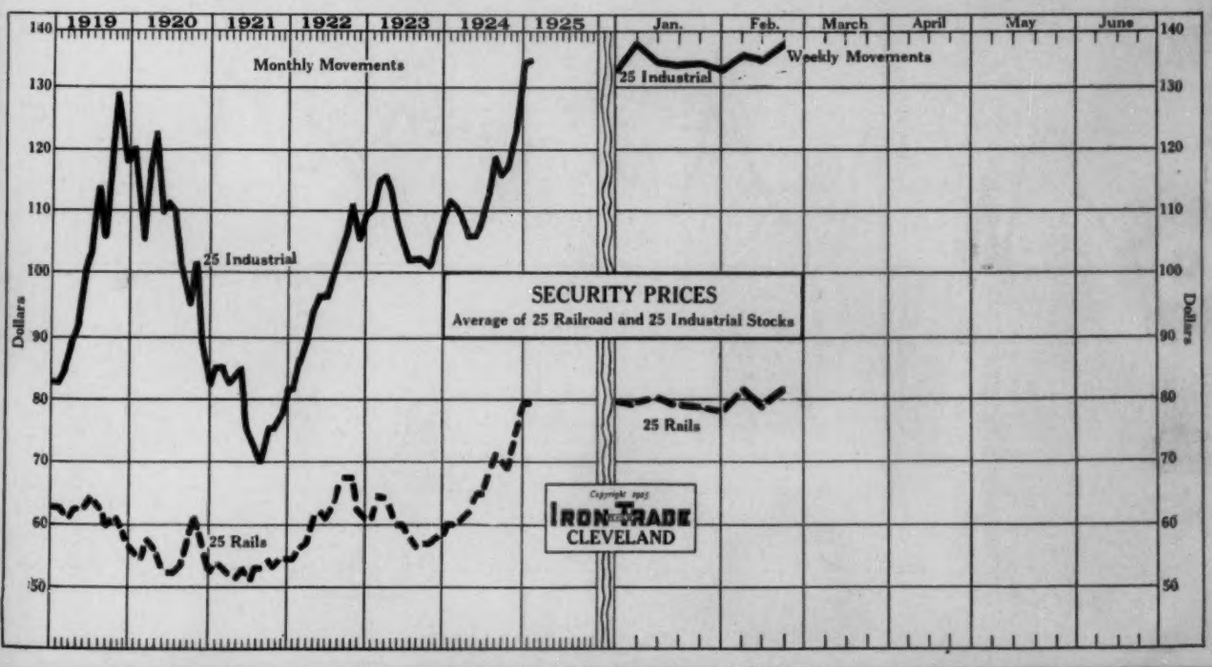


Steel Price Index

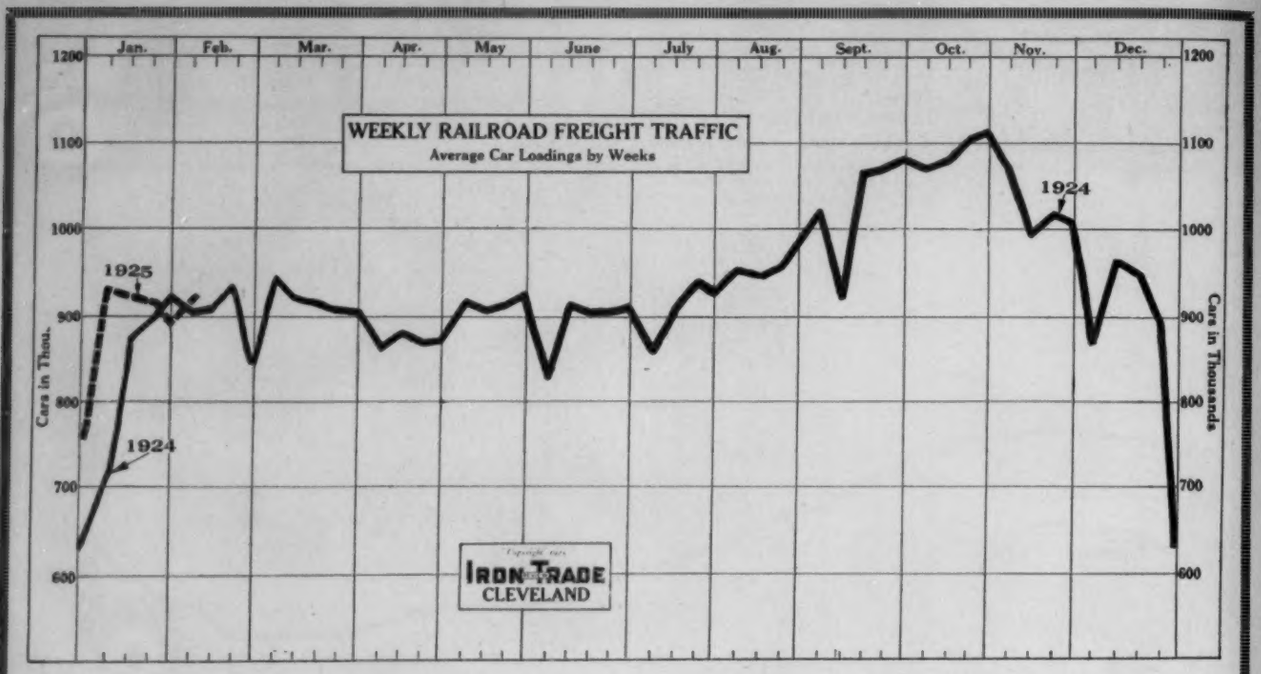
THE composite market average of 14 iron and steel products has moved gradually higher since the first week of November. Last week the average stood at $41.06. That was an advance of 6 per cent above the lowest ebb of prices in 1924 but 5 per cent below the level of one year before. Pig iron prices are weak. The test of advanced quotations for finished products will come shortly when buying for second quarter begins. Production is large and unless consumption increases materially price advances may not hold.

Security Market

THE stock market has been moving without much purpose since the early weeks of 1925. Some spectacular upward movements have occurred, but the main body of investment stocks has not continued the great advance which began last autumn. Recently sharp gains have appeared in quotations but there are important signs that shares are now in the selling range. One of these signs is firmer money. The average for 25 industrial shares is $138.90 against an average of $135.13 one month ago.



The Business Trend

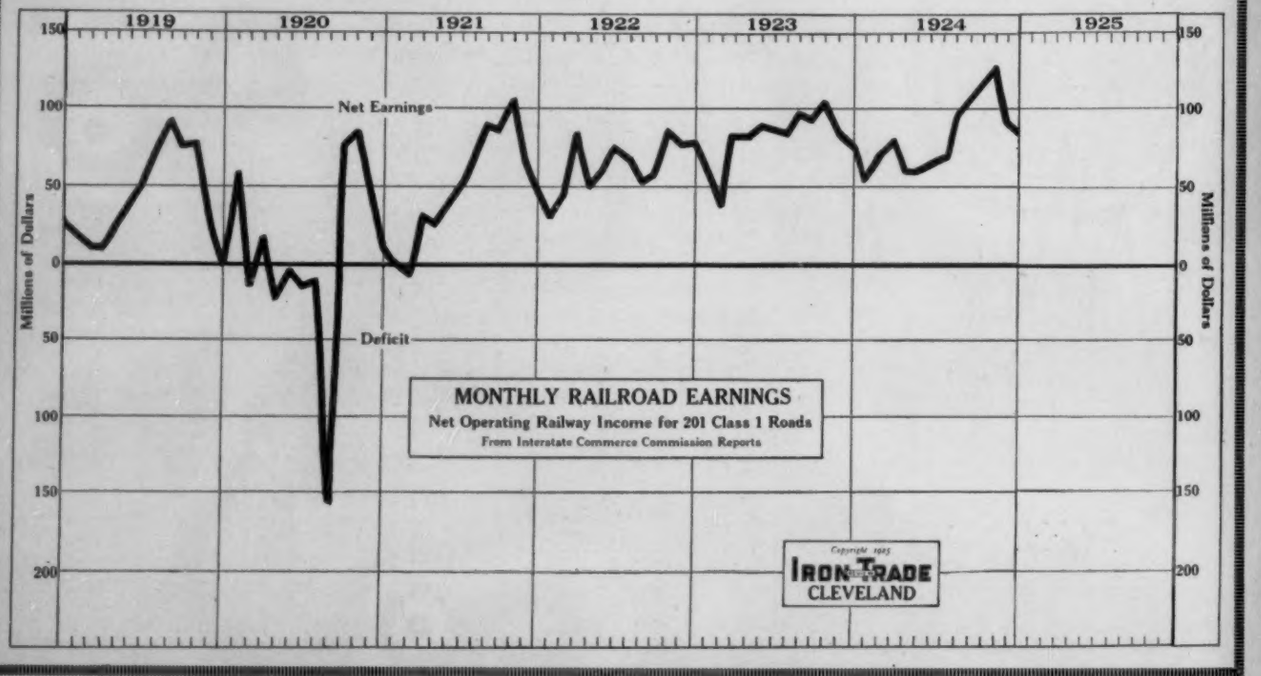


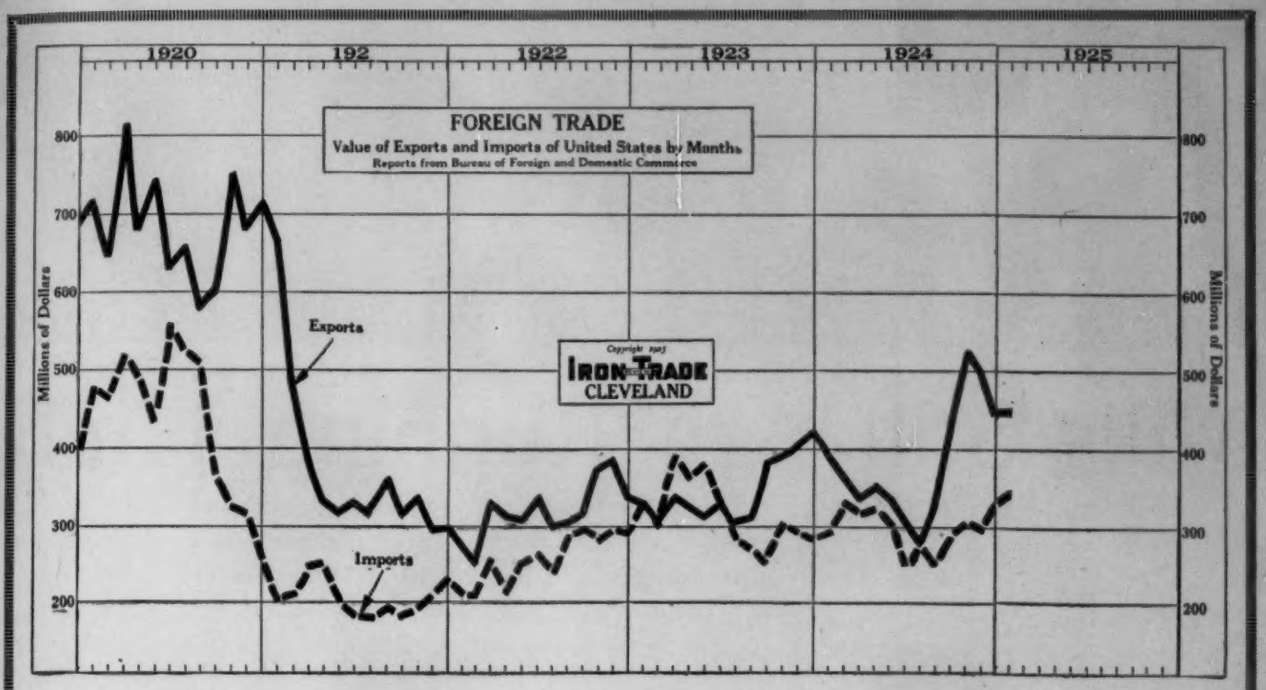
Freight Movement

FREIGHT movements continue to mark up unprecedented records for this season of the year reflecting huge distribution. In the week ended Feb. 7 the total of car loadings was 928,244. That compared with 906,015 cars in the corresponding period of 1924. In the first six weeks of 1925 loadings of all classes of revenue freight amounted to 5,379,237 cars or 178,950 cars more than in the same period one year ago. The increase over the high record of 1924 was 3.4 per cent and compared with 1920 the gain was 11 per cent.

Railroad Earnings

NET earnings of Class 1 railroads in 1924 amounted to $987,133,650 against $983,736,200 in 1923. This increase was brought about in the face of a decrease of nearly 6 per cent in gross operating revenue. Freight traffic in 1924, measured in net ton miles, was 6 per cent less than in the preceding year. Increased efficiency in operation resulted in a reduction of nearly 8 per cent in operating expenses compared with 1923. Lower freight rates than the 1920 level saved shippers $670,000,000 last year.



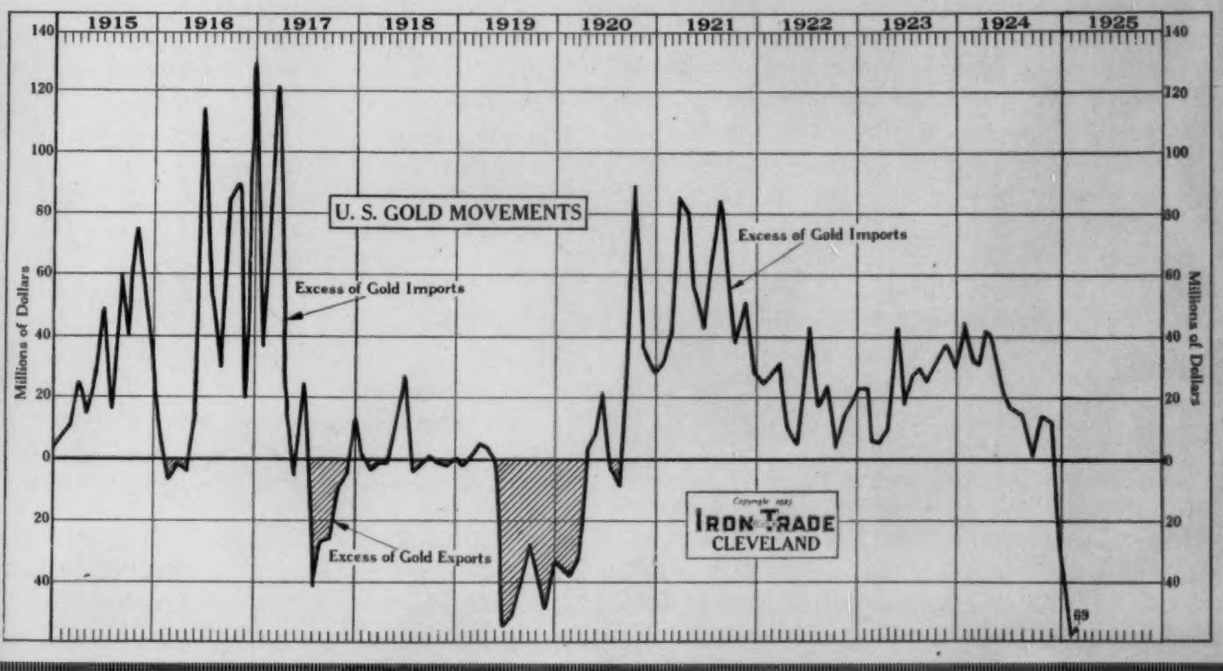


Foreign Trade

EXPORTS of merchandise in January totaled $447,000,000. This was smaller than the big grain exporting months of October and November, but with those exceptions it was the largest figure for any month since February, 1921. Unprecedented exports of cotton partly explain the heavy aggregate. Imports of $346,000,000 were the largest for any month since May, 1923. They reflect greater domestic industrial activity with needs for more raw material. They also indicate active foreign competition in home market.

Gold Movement

A NEW chapter in international finance is being written by the huge outflow of gold from this country. In January exports of the metal amounted to $73,488,505. This was the largest outgo for any month in history except for June, 1919. The excess of exports over imports was $69,265,358, and that figure stands unsurpassed. Exports of gold have followed a decade of unprecedented imports. The gold is now departing largely because the recent loans to Europe have increased financial strength abroad.



Mills Still Are Running High

Liberal Specifications and Fair New Business Sustain the Situation—Signs of Spring Pick-up Are Awaited—Some Concessions in Automobile Steel—Raw Materials Are Inactive

STEEL producers generally find difficulty in building up backlogs of business but a liberal run of specifications plus a fair amount of new tonnage still is sufficient to keep production in high gear. This condition is making the industry more dependent than usual on incoming week-to-week tonnage. Fresh buying is beginning to show more signs of stirring as spring approaches and the volume into which it may develop becomes a matter of immediate importance now that first quarter contracts are nearing termination. The position of Chicago mills remains better than the average since they have accumulated a several months' order book and continue to maintain it in the face of heavy production. Partially because of the large business of its Chicago subsidiary and other factors, the Steel corporation is able to make a better showing on its bookings than the independent companies.

Operations after having yielded slightly from the recent topmost level, are substantially unchanged this week. The Steel corporation is running at 93½ per cent of ingot capacity compared with a high rate of 95 per cent two weeks ago. Independent plants are 80 per cent active, making the average for the general industry 88 per cent. Chicago, the strongest point, still is maintaining 100 per cent production. Valley sheet mills are 86 per cent active this week, a gain of 2 per cent.

Coke Still Confused

Wage conditions still keep the coke situation confused and buyers are waiting until the air is cleared. Some producers are putting it up to the workmen that insistence on the present scale means shutdowns. There is no general sentiment for going back to the 1917 basis.

The railroads are pressing the mills for rails and track fastenings on order but are placing new requirements deliberately. The Rock Island bought 1600 cars and the week's orders in locomotives total 50. The New York Central has exercised its full option for rails, taking the total originally closed last October, 184,650 tons. The Baltimore & Ohio bought 1,000,000 tie plates. The Illinois Central has put out its largest machine tool list in several years.

Prices Are Shaded

The automobile industry, buying in piecemeal fashion and apparently gunning for price concessions, has been able to gather in some tonnage below the general quotations, especially in sheets. Full finished sheets quoted at 4.75c, Pittsburgh, for second quarter are available freely at 4.60c for April delivery. At least one lot for second quarter has gone well under that figure. Black sheets carrying attractive extras were sold to the automobile trade within the week at 3.40c, Pittsburgh, or lower. Detroit reports the Ford Motor Co. going on a six-day week and gains by Studebaker, Buick and Chevrolet.

IRON TRADE REVIEW composite of fourteen leading iron and steel products fell again slightly this week to $41.02. Last week it was $41.06 and two weeks ago $41.21.

Pig iron remains dull and inactive. A steelmaking interest is offering iron at $22, valley, for No. 2 foundry. A sale of basic at Pittsburgh went at $21.50, valley.

Awards Are Heavy

New York with 25,000 tons brought the week's structural steel lettings to 47,824 tons which is beyond the 1925 weekly average to date. Municipal work at New York contributed 8300 tons for subways and 7000 tons for a repair station. For Philadelphia subways, 14,000 tons additional is up. Riveted pipe lines are more numerous. Four for western points call for 8200 tons with one eastern job, 1300 tons awarded.

Some business is being placed at the higher prices asked for plates, shapes and bars but this has not yet established the market for the bulk of the tonnage still is to be placed. Some expiring wire

contracts have been extended through March at $2 per ton advance over November. Nut and bolt prices are announced as unchanged for second quarter. Nuts and bolts now are based at Pittsburgh, Chicago and Cleveland, the former method of the price at producer's plant with freight allowance, having been dropped.

Several large consumers have increased iron ore allotments under long term contracts, involving in all about 500,000 tons. Ore prices still are to be named.

Last week's upturn in scrap prices at Chicago was short-lived, being succeeded this week there and in other centers with renewed weakness and stagnant trading.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 25, 1925	Jan., 1925	Nov., 1924	Feb., 1924
PIG IRON				
Bessemer, valley, del., Pittsburgh	$24.26	24.56	22.11	25.01
Basic, valley	22.00	21.80	19.25	22.00
Basic, eastern del., eastern Pa.	24.25	24.25	21.46	22.50
*No. 2 foundry, del. Pittsburgh	23.76	23.91	21.36	24.76
No. 2 foundry, Chicago	24.00	23.80	21.00	24.40
*Southern, No. 2, Birmingham	21.00	20.00	17.90	23.00
*Southern Ohio, No. 2, Ironton	22.00	22.00	20.90	24.00
**No. 2X, Virginia furnace	24.50	24.50	24.50	25.75
**No. 2X, eastern, del. Phila.	25.26	25.61	22.98	24.26
Malleable, valley	22.00	22.20	19.75	23.00
Malleable, Chicago	24.00	23.80	21.00	24.40
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del. Pittsburgh	23.26	23.66	20.76	24.61
Ferromanganese, del., Pittsburgh	119.79	119.79	107.29	112.29
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	3.50	4.10	3.00	4.00
Connellsville foundry, ovens	4.25	5.10	4.05	4.80
SEMIFINISHED MATERIAL				
Sheet bars, bessemer, Pittsburgh	39.00	39.20	37.00	42.50
Sheet bars, open-hearth, Pittsburgh	39.00	39.20	37.00	42.50
Billets, bessemer, Pittsburgh	37.50	37.40	35.50	40.00
Billets, open-hearth, Pittsburgh	37.50	37.80	35.50	40.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	2.10	2.10	2.05	2.40
Steel bars, Chicago	2.20	2.10	2.05	2.50
Steel bars, Philadelphia	2.32	2.32	2.295	2.72
Iron bars, Philadelphia	2.28	2.28	2.18	2.62
Iron bars, Chicago mill	2.00	2.00	2.10	2.40
Beams, Pittsburgh	2.10	2.10	2.00	2.50
Beams, Philadelphia	2.32	3.02	2.12	2.67
Beams, Chicago	2.30	2.20	2.15	2.60
Tank plates, Pittsburgh	2.10	2.00	1.85	2.45
Tank plates, Philadelphia	2.32	3.02	2.02	2.62
Tank plates, Chicago	2.30	2.20	2.15	2.60
Sheets, blk., No. 28, Pittsburgh	3.50	3.55	3.45	3.75
Sheets, blue anl., No. 10, Pittsburgh	2.70	2.70	2.60	2.90
Sheets, galv., No. 28, Pittsburgh	4.75	4.75	4.60	4.90
Sheets, black, No. 28, Chicago	3.85	3.75	3.65	4.10
Sheets, blue anl. No. 10, Chicago	2.95	2.85	2.85	3.35
Sheets, galv. No. 28, Chicago	5.00	4.90	4.75	5.20
Wire nails, Pittsburgh	2.85	2.85	2.75	3.00
Wire nails, Chicago	3.10	3.00	2.95	3.35
OLD MATERIAL				
Heavy melting steel Pittsburgh	18.00	22.10	19.85	21.60
Heavy melting steel, eastern Pa.	17.00	20.00	18.05	18.90
Heavy melting steel, Chicago	17.75	19.45	17.05	18.00
No. 1 wrought, eastern Pa.	20.50	21.50	18.95	21.35
No. 1 wrought, Chicago	18.00	19.15	17.10	17.50
Rails for rolling, Chicago	19.00	20.95	18.20	20.00

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Feb. 25, 1925)	**$41.02**
Last week (Feb. 18, 1925)	**41.06**
One month ago (Jan. 1925)	**41.02**
Three months ago (Nov. 1924)	**39.00**
One year ago (Feb. 1924)	**43.49**
Ten years ago (Feb. 1915)	**22.21**

Late News Flashes

Philadelphia Subway Work Up

Philadelphia, Feb. 24.—Bids on the third section of the Philadelphia subway are to be taken March 17, 14,000 tons of structural shapes being involved. The first section, placed in July involved 10,000 tons, and second section, awarded in October took 9000 tons.

Plan No Worcester Extensions

New York, Feb. 24.—Reports that the American Steel & Wire Co. is planning the building of large extensions to its Worcester, Mass., plant, are unfounded, it is stated officially.

Senate Confirms Humphrey

Washington, Feb. 24.—Appointment of William E. Humphrey, former congressman, as a member of the federal trade commission, was confirmed by the United States senate today by a majority vote. Ten senators of the radical group voted against the confirmation.

Industry at 88 Per Cent

New York, Feb. 24.—Steel ingot operations of the Steel corporation at present is at 93.5 per cent. The average of the independent companies is 80 per cent, making the average for the general industry 88 per cent. Recently the Steel corporation's operations have been as high as 95 per cent.

Deny Reports of Merger

Pittsburgh, Feb. 24.—Officials of the Jones & Laughlin Steel Corp. have denied reports emanating from New York that any such plan as a merger with the Republic Iron & Steel Co., Youngstown, O., was being considered. They state further that no merger of any kind is under consideration by the Jones & Laughlin corporation at this time.

Will Install 600-Ton Mixer

Detroit, Feb. 24.—Equipment for the open-hearth plant now under construction at the River Rouge plant of the Ford Motor Co. is being purchased as fast as circumstances will permit. Early this week a contract for a 600-ton mixer of the cylindrical type was placed with the Pennsylvania Engineering Works, New Castle, Pa. A contract for four 100-ton open hearths to be used in connection with the duplexing process of steelmaking, recently was placed with S. R. Smythe & Co., Inc., Pittsburgh. This battery of furnaces marks the initial step of the Ford company toward a 20-unit open-hearth plant.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch and larger

Pittsburgh, open hearth	$37.50 to 38.50
Pittsburgh, bessemer	37.50 to 38.00
Youngstown	37.50
Philadelphia	42.30 to 43.30
Chicago	38.00 to 40.00
Forging, Pittsburgh	42.50 to 45.00
Forging, Philadelphia	47.30 to 48.30

SHEET BARS

Pittsburgh and Youngstown	39.00

SLABS

Pittsburgh	37.50 to 38.50
Youngstown	37.50

WIRE RODS

¼-inch and finer

Pittsburgh	$48.00 to 50.00
Cleveland	48.00 to 50.00
Chicago	52.00 to 53.00

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	2.10c
Universal skelp, Pittsburgh	2.10c
Sheared skelp, Pittsburgh	2.10c

Structural Shapes

Pittsburgh	2.10c to 2.20c
Philadelphia	2.32c
New York	2.34c to 2.44c
Chicago	2.30c
Cleveland	2.29c to 2.39c
Birmingham	2.35c to 2.45c

Steel Plates

Pittsburgh	2.10c to 2.20c
Philadelphia	2.32c to 2.42c
New York	2.34c to 2.44c
Chicago	2.30c
Cleveland	2.29c
Birmingham	2.25c to 2.35c

Iron and Steel Bars

Pittsburgh, soft steel	2.10c to 2.20c
Pittsburgh, cold finishing	2.25c to 2.35c
Pittsburgh, forging quality	2.35c to 2.45c
Philadelphia, soft steel	2.32c to 2.42c
New York, soft steel	2.34c to 2.44c
Chicago, soft steel	2.20c
Cleveland, soft steel	2.29c to 2.39c
Birmingham, soft steel	2.35c to 2.45c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.10c to 2.20c
Chicago, rail steel	2.13c
Mill, rail steel	1.90c to 2.00c
Philadelphia, common iron	2.28c to 2.32c
New York, common iron	2.34c
Chicago, common iron	2.00c to 2.15c

Hoops, Bands, Strips

Hoops, Pittsburgh	2.40c to 2.50c
Bands, Pittsburgh	2.40c to 2.50c
Hot rolled strip steel, Pittsburgh stamping quality	2.40c to 2.50c
Hot rolled strip steel, Chicago	2.60c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	4.15c

Chicago and Worcester, Mass. $3 per ton higher.

Cold Finished Steel

Cold finished steel bars, drawn or rolled Pittsburgh, Chicago, carloads	2.80c
Less carloads	3.05c
Steel shafting, turned and polished Pittsburgh, Chicago	2.80c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steels

Pittsburgh base

S. A. E. Series—	
2300 (3½ per cent nickel)	4.75c to 5.00c
3100 (nickel chromium)	3.65c to 3.75c
6100 (Chrome vanadium)	4.50c to 4.75c
6100 (Chrome vanadium spring)	4.00c to 4.25c
9250 (Silico manganese spring)	3.50c to 3.60c

Billets—4 x 4 to 10 x 10, gross ton at net ton bar price; under 4 x 4 to 2½ x 2½-inch $5 higher. Chicago base $2 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 32.50
Relaying rails, Pittsburgh	27.00 to 30.00
Light rails, 25 to 45 mill	1.80c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.85c to 2.90c
Spikes, small railroad, 7/16-inch and smaller, Pittsburgh	3.10c to 3.20c
Spikes, Boat and Barge, Pitts	3.25c
Spikes, railroad, Chicago	3.00c
Track bolts, Pitts. standard	3.90c to 4.25c
Track bolts, Chicago	4.00c
Tie plates, Pittsburgh	2.35c to 2.50c
Tie plates, Chicago	2.45c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.85c to 2.95c
Galv'd nails, 1-inch and over	5.10c to 5.20c
Plain wire	2.60c to 2.70c
Annealed wire	2.75c to 2.85c
Galvanized wire No. 9 gage	3.20c to 3.30c
Barbed wire, painted	3.30c to 3.40c
Barbed wire, galvanized	3.55c to 3.65c
Polished staples	3.30c to 3.40c
Galvanized staples	3.55c to 3.65c
Coated nails, count keg	2.25c to 2.35c
Woven wire fencing (retailers) 12½ gage, 26-in. high 7 bars and 12-in. stays per 100 rods, f.o.b. Pittsburgh	$20.56 to 21.09

Joliet, DeKalb and Waukegan, Ill., $2 per ton over Cleveland-Pittsburgh base on products made there. Worcester, Mass., and Fairfield, Ala., $3 higher. Duluth $2 higher. Chicago delivered price $3 higher, Anderson, Ind., $1 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh base	3.50c to 3.70c
No. 28, Philadelphia, delivered	3.82c to 3.92c
No. 28, Gary, Indiana Harbor	3.80c
No. 28, Chicago, delivered	3.85c

TIN MILL, BLACK

No. 28, Pittsburgh, base	3.60c to 3.70c
No. 28, Gary base	3.80c

GALVANIZED

No. 28, Pittsburgh, base	4.75c to 4.85c
No. 28, Philadelphia, delivered	5.02c to 5.07c
No. 28, Gary, Indiana Harbor	4.95c
No. 28, Chicago, delivered	5.00c

BLUE ANNEALED

No. 10, Pittsburgh base	2.70c to 2.80c
No. 10, Philadelphia, delivered	3.02c to 3.12c
No. 10, Gary, Indiana Harbor	2.90c
No. 10, Chicago, delivered	2.95c

AUTOMOBILE SHEETS

No. 22, Pittsburgh base	4.60c to 4.75c

Tin Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$5.50

Gary, Ind. base 10 cents higher

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	62	50½
1 to 1½-inch, but iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—f.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	38½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3½ to 3¾-inch	35

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.25c
Sheet piling base, Pittsburgh	2.15c to 2.25c
Cut nails, f.o.b. mills	2.90c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$53.20 to 54.20
Six-inch and over, Chicago	49.20 to 50.20
Four-inch, Birmingham	44.00 to 44.50
Six-inch and over Birmingham	40.00 to 40.50
Four-inch, New York	60.50 to 61.60
Six-inch and over, New York	55.50 to 56.60

Standard fittings, Birmingham, base..$110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

Nuts and Bolts

F.o.b. basing points,, Pittsburgh, Cleveland and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched semifinished hexagon nuts ½-inch and larger	75, 10 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off

Price f.o.b. Pittsburgh, packages of 50.

CARRIAGE BOLTS

(⅜ x 6", smaller and shorter)

Rolled thread	50, 10 and 5*
Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅜ x 4", hot pressed nuts)

Rolled thread	50, 10 and 5*
Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 1, 2 and 3 heads	50 and 10 off
4 to 10 heads	50-10 + 20 off
*Flat and round head stove bolts	80 and 5 off
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off

Rough stud bolts with nuts (250 pieces or more of a size) 40 and 10 off

*Price quoted on small business.

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S. A. E. Castellated	U. S. S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	23.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP AND SET SCREWS

Milled	80, 10, and 10 off
Upset	80, 10, 10 and 10 off

F.o.b. producer's plant freight allowed on 300 pounds or more as above.

Rivets

Structural rivets, carloads Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	2.75c
Rivets, 7/16-in. and smaller Pittsburgh and Cleveland	70, 10 and 5 off
Rivets, 7/16-in. and small Chicago*	70, 10 off

*Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought, c. l., Chicago dist.	$5.75 to $6.00 off
Wrought, c. l., Pitts. dist.	$6.00 to $6.10 off
Lock washers f.o.b. factory	80, 10 and 5 off

Pig Iron

Valley Market Dips to $22 on Foundry Grade—Basic Sales Made at Equivalent of $21.50 Valley—Buyers Wait

AN EASIER price situation has developed in the pig iron market, most conspicuously in the valley, where No. 2 foundry iron now is offered by one of the leading steelmaking interests at $22. This undoubtedly has been brought about by liberal offerings recently at this price by brokerage interests.

Fair size tonnages of basic placed during the week developed a price of $22.50, Pittsburgh furnace, equivalent to $21.50, valley, while bessemer tonnage was placed on a basis of $22.50 valley. While $23.50 to $24 is represented as the eastern Pennsylvania price on foundry iron, reports of transactions at lower figures lack confirmation. Buyers in general are waiting. Shipments are in fair volume, although in the southern Ohio district some makers are beginning to pile iron.

PITTSBURGH, Feb. 24.—The pig iron market again is inactive, following the purchase last week by the Allegheny Steel Co. of 1000 tons each of basic and bessemer for prompt shipment. The basic iron was bought at about $22.50, Pittsburgn furnace, figuring back to $21.50, valley. A valley producer successfully quoted $22.50, valley, on the Allegheny's bessemer tonnage. Other valley makers are maintaining $23, minimum, and are receiving a few small lots. The N. & G. Taylor Co., Cumberland, Md., is understood to have bought 1000 tons of basic at about $21, f.o.b. The Altoona Iron Works is reported to have bought 1500 tons of gray forge iron from an eastern Pennsylvania furnace. The only inquiries pending here involve 50 to 200 tons of foundry iron at a time. A price of $22, valley, is quoted in the prompt market on No. 2 foundry iron. While some makers are maintaining $22.50, minimum, base, for the second quarter others are taking $22 for that period. The Pittsburgh Engineering Co. closed for 1000 tons of No. 2 and No. 2X, with a valley furnace, at $22 and $22.50, valley, respectively. One maker shaded this price 25 cents in order to move two carloads standing on track, but this was a distress figure. The Westinghouse Electric & Mfg. Co. wants 100 tons of bessemer. The Pittsburgh Plate Glass Co. bought 100 tons of malleable at $22.50.

Boston, Feb. 24.—Pig iron prices in New England remain surprisingly firm despite low foreign iron offers. A few cargoes have reached Boston and Providence under the necessity of prompt disposal, and concessions have been made. Limited lots have been offered at $23.50 Providence and $24 Boston for 2.25 to 2.75 silicon iron. Usual quotations are 50 cents higher. Eastern Pennsylvania iron apparently holds firm at $23.50 base or $27.15 delivered New England. With one exception Buffalo furnaces hold to $23 base. One furnace, however, has offered No. 2X at $22.50 Buffalo or $27.41 delivered New England. Recent sales have been almost entirely for lots under 300 tons and the total is less than a week ago.

New York, Feb. 24.—Pig iron buying has been exceedingly small and it is doubted whether the total sales over the past week aggregated more than 2000 tons. Consumers like the Central Foundry Co., Essex Foundry Co., and New York Air Brake Co., who recently inquired for their second quarter requirements, have not taken action. Prices are unchanged at $23.50 to $24 base furnace on eastern foundry iron and $23 base furnace on Buffalo foundry iron.

Philadelphia, Feb. 24.—Pig iron demand continues to lag. Foundry iron still is $23.50 to $24, base eastern furnace, plus 50 cents to $1 silicon differentials. Some lower prices are reported, but cannot be confirmed. About 2000 tons of low phosphorus iron was sold in the past week, of which 500 tons was shipped from England. Basic is featureless. Virginia iron continues $24 base furnace. Malleable was sold at $24 to $24.50, eastern Pennsylvania furnace.

Buffalo, Feb. 24.—The pig iron market continues exceptionally quiet. Inquiries are pending for 2500 to 3000 tons. The Bethlehem Steel Co. has reduced operations, now having six furnaces in blast instead of seven. An increase in production by the Hanna interests keeps the number of units working in the district unchanged at 16. Prices show no weakness except those quoted on resale iron and off grades, makers declare. The base is $23 for No. 2 foundry, with No. 2X quoted at $23.50 and No. 1X at $24.50. Sales are in proportion to inquiry.

Cleveland, Feb. 24.—Pig iron makers are finding some comfort in reports indicating expansion of automotive production in the Detroit district. The Ford Motor Co.'s plants at Highland Park and River Rouge that were on five-day-a-week schedule have resumed full-time operations. The Studebaker Corp.'s exports so far this month are 2000 cars, the largest in its history for a similar period. Operations at Buick and Chevrolet plants are picking up. Some blast furnace interests are shipping more iron than they are making. The current market is dull. Sales by those whose headquarters are here total 8000 tons for the week. Inquiries are slightly better than in the week preceding. The total is for about 5000 tons, including one lot of 2000 tons and another of 1500 tons. Quotations from Cleveland furnaces remain nominally at $23.50 to $24, furnace. However, a leading valley maker is offering at $22, valley, which would bring the delivered price here under the local makers' minimum. Competition at $22, valley, from a brokerage interest, also has had some influence on the market in other directions.

Cincinnati Feb. 24.—Inactivity in demand, together with the fact that some melters are holding up shipments, has resulted in southern Ohio blast furnace interests piling iron for the first time in several months. Sales in the week did not aggregate 2000 tons of all grades in this district. The Voigt Bros. Mfg. Co., Louisville, Ky. bought 300 tons of malleable iron for second quarter delivery. Carlot buying has tapered off. While prices are unchanged foundrymen report that they have had offers of resale southern iron at

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$22.50 to 23.00
Bessemer, Pittsburgh	24.26 to 24.76
Basic, valley	22.00
Basic, Pittsburgh	23.76
Basic, Buffalo	22.00 to 22.50
Basic del., eastern Pa.	24.00 to 24.50
Malleable, valley	22.00 to 22.50
Malleable, Pittsburgh	23.76 to 24.26
Malleable, Cleveland, del.	24.00 to 24.50
Malleable, Chicago	24.00
Malleable, Buffalo	22.00 to 23.00
Malleable, del., eastern Pa.	25.00 to 26.01
No. 1X, eastern del., Phila.	26.26 to 26.63
No. 1X, Buffalo	23.50 to 24.00
No. 1 foundry, Chicago	25.00
No. 2 foundry, valley	22.00 to 22.50
No. 2 foundry, Pittsburgh	23.76 to 24.26
No. 2 foundry, Buffalo	22.50
No. 2 foundry, Chicago	24.00
No. 2 foundry, Granite City	25.00 to 25.50
No. 2 foundry, Ironton fur.	22.00 to 23.00
No. 2 foundry, Cleveland, del.	24.00 to 24.50
No. 2 foundry, del., Phila.	24.76 to 25.13
No. 2 foundry, N. J., tidewater	25.39 to 25.76
No. 2X, eastern del., Phila.	25.26 to 26.88
No. 2X, east. N. J., tidewater	26.14 to 26.49
No. 2X, eastern del., Boston	27.15 to 27.65
No. 2X, foundry, Buffalo fur.	23.50
No. 2X, Buffalo, del., Boston	27.42 to 27.92
Continental foundry, Boston	23.50 to 24.00
No. 2 southern, Birmingham	20.00 to 22.00
No. 2 southern, Cincinnati	24.00 to 26.05
No. 2 southern, Philadelphia	27.80 to 29.80
No. 2 southern, Chicago	26.01 to 28.01
No. 2 southern, Cleveland	26.01 to 28.01
No. 2 southern Boston (rail and water	26.91 to 28.91
No. 2 southern, St. Louis	26.17 to 27.17
No. 2X, Virginia furnace	24.50 to 25.50
No. 2X, Virginia, Phila.	29.67 to 30.17
No. 2X, Virginia, Jersey City	30.04 to 30.54
No. 2X, Virginia, Boston	30.42 to 30.92
Gray forge, eastern Pa.	24.00 to 25.00
Gray forge, val. del., Pitts.	23.26 to 23.76
Low phos., standard, valley	29.00 to 29.50
Low phos., standard, Phila.	29.79
Low phos., Lebanon, furnace	26.00
Low phos., English, Phila.	26.76 to 27.26
Charcoal, Birmingham	30.00
Charcoal, Superior, Chicago	29.04

Silvery iron, Jackson county, Ohio, furnace, 7 to 8 per cent, $29.00; 8 to 9 per cent, $30.50; 9 to 10 per cent; $32.50; 10 to 11 per cent, $34.50; 11 to 12 per cent, $37.00; 12 per cent, $39.50.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 to 11 per cent, $39.50; 11 to 12 per cent, $42.00; 12 to 13 per cent, $44.50.

$19.50 Birmingham. The market on northern iron continues to range from $22 to $23 Ironton base, while southern iron is quotable at $20 to $22, Birmingham.

Chicago, Feb. 24.—Buying of northern No. 2 foundry and malleable iron continues extremely light, but the market is unchanged at $24, furnace. No large inquiries are pending, and recent business is restricted to lots of several hundred tons. The sold-up condition of furnaces, running well into the second quarter, is a strengthening factor. Shipments continue at an undiminished rate. A southern Wisconsin melter placed 300 tons of No. 2 foundry iron. Charcoal iron sales in the past week total 650 tons.

St. Louis, Feb. 24.—While no specific price reductions have been made, the tone of the pig iron market is easier. There is not the pressure for shipments which characterized the situation earlier in the month and during January, and sellers have received a few requests to hold back. With few exceptions demand is confined to small lots for prompt delivery. A local car equipment maker bought 2500 tons and an Illinois melter 1000 tons from the St. Louis Coke & Iron Co. Inquiries total less than 1200 tons. No. 2 southern iron continues unchanged at $21.50 to $22, Birmingham, while $24 is asked by Chicago furnaces for the base grade. The leading local producer is quoting $25 to $25.50, f.o.b. Granite City.

Birmingham, Ala., Feb. 24.—Selling of pig iron by Birmingham furnace interests continues slow, but there is no weakening in quotations, $21.50 to $22 being asked for No. 2 foundry. Some furnace companies have been declining to go below $22, one refusing two lots amounting to 750 tons at $1 or even 50 cents under the price named.

Ferroalloys

Sales Moderate and Shipments Steady —Prices Firm

New York, Feb. 24.—Moderate sales of ferromanganese continue to be made from week to week. Perhaps 1000 tons was placed the past week. The market is firm at $115, duty paid tidewater. Some requests recently have appeared from consumers to hold up shipments. Generally, however, they are taking deliveries. Spiegeleisen is firm at $33, furnace, for 20 per cent, several hundred tons having been sold on this basis within the week.

Pittsburgh, Feb. 23.—Further quietness has characterized the ferroalloys market the past week. One or two of the inquiries for 25 to 100 tons of ferromanganese current last week have turned into orders and only one or two additional small inquiries have come out. One or two buyers have found it necessary to anticipate and have ordered in March and April tonnage. Another who received heavy shipments in December and January has asked the shipments be deferred until April and May. The price on both domestic and imported material, except German, is still $115, seaboard base. On German ferromanganese not strictly standard, some concessions are available. In spiegeleisen no prices below $33 are noted. This price is named on fair sized lots with $34 applying on single carloads.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale	$115.00
Ferromanganese delivered Pittsburgh	119.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	32.00 to 33.00
Ferrosilicon, 50 per cent contract freight allowed	85.00
Ferrotungsten standard, cents per pound contained	85.00 to 87.00
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.60 to 3.75
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00

†Duty paid.

Coke

Deadlock in Connellsville Market Continues—No Progress Made in Wage Adjustment

DULL conditions continue in the coke markets. Practically no inquiries for blast furnace fuel for the second quarter are pending before makers in the Connellsville district, buyers postponing purchases because of the wide divergence of prices in the prompt and contract markets. A few sales for prompt delivery have carried prices of $3.50 to $3.80, while makers are asking $4 to $4.25 for the second quarter. Little progress has been made toward a wage adjustment.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville, furnace	$ 3.50 to 4.25
Connellsville foundry	4.25 to 5.50
Wise county furnace	4.00 to 4.50
Wise county furnace	4.25 to 4.50
Wise county foundry	5.00 to 5.50
Alabama furnace	4.00 to 4.50
Alabama foundry	5.00 to 5.50

By-Product

Foundry, Newark, N. J., del.	$10.41
Foundry, Chicago, ovens	10.75
Foundry, New England, del.	12.00
Foundry, St. Louis	11.00
Foundry, Granite City, Ill.	9.00
Foundry, Birmingham	5.00 to 5.50

Pittsburgh, Feb. 24.—A virtual deadlock still exists in the beehive coke market. Blast furnace interests are hesitating to close for future supplies because of the present wide spread between prompt and contract market quotations. Practically no second quarter inquiries are out, although the Reliance Coke & Furnace Co. would buy at a low figure sooner than make fuel. A few coke makers approaching consumers are quoting $4 to $4.25. They realize the necessity for clarification of wage matters. Some coke producers are putting the matter plainly up to workmen, stating the high wage rate means shutdowns or partial operations. However, the matter of a concerted return to the 1917 wage scale still is in abeyance. A few sales in the prompt market, involving 10 or 25 carloads at a time are noted at $3.50 to $3.80. Medium sulphur coke is $3 to $3.25. The largest sale recently made involved 500 tons for export to South America and $3.25 was secured. Foundry coke sales are dwindling. The price range is $4.25 to $6, the maximum applying to premium brands. Little or no contracting is noted.

Production of coke in the Connellsville region for the week ended Feb. 14 was 193,890 tons, as against 207,450 tons the preceding week, according to the *Connellsville Courier.*

Boston, Feb. 24.—Foundry coke demand has quieted down. The New England Coal & Coke Co. with a daily production of 1500 tons reports but 400 tons of this as foundry grade. The price is unchanged at $12 delivered.

New York, Feb. 24.—Weakness continues reflected in coke. Prices on spot beehive foundry coke range from $4.50 to $5.50 Connellsville with distress lots coming out at $4.25. Demand is slow. By-product foundry coke continues $10.41 delivered at Newark and other northern New Jersey consuming points.

Cincinnati, Feb. 24.—Carlot sales mainly for prompt shipment feature the local coke market. Demand for foundry and furnace grades has fallen off. Price concessions again are noted. Production has been curtailed in the Wise county and New river districts. In view of the light buying, Connellsville coke is not a factor in this market.

St. Louis, Feb. 24.—Demand for foundry coke continues fairly brisk. Some sales to the West and Southwest are reported by local by-product manufacturers, and these interests have been able to dispose of their entire current output. The leading east-side producer sold 500 tons to a local foundry for shipment through the next 40 days.

Birmingham, Ala., Feb. 24.—Coke quotations are firm, practically every ton being produced finding a ready demand. While 82 by-product coke ovens are being built in the Birmingham district, and 40 others are being rebuilt, a report is current that negotiations are under way for the construction of a battery of 60 ovens as an addition to one plant here, and also an entirely new plant.

Plates

Pipe Line Projects Feature New Inquiries—More Vessels Pending —Prices Unchanged

INQUIRIES involve a larger tonnage of plates. Four western pipe line projects require 8900 tons. New vessel requirements in the East specify 9400 tons. The Baldwin Locomotive Works will need 1500 tons for 38 locomotives booked recently. Chicago freight car builders are specifying heavily. New York and Boston reports state prices are firmer. Pittsburgh mill operations remain around 90 per cent of capacity. Buying there is restricted to small lots. The usual price is 2.10c, Pittsburgh.

PLATE PRICES, PAGE 582

Philadelphia, Feb. 24.—Some platemakers report better specifications in the past week than in the preceding week. Generally, however, orders do not replace shipments. Operations are somewhat smaller. They fluctuate from 50 to 70 per cent. In addition to inquiries for vessels, as previously reported, the Baltimore & Philadelphia Steamship Co. is inquiry for two passenger freight vessels, involving a total of 7000 tons of steel. The city of Philadelphia is inquiring for two dump barges, involving 2400 tons of steel. The Baldwin Locomotive works will obtain 1500 tons of plates for 38 locomotives booked.

Boston, Feb. 24.—Plate inquiry shows improvement with prices firming up on the 2.465c level. The Boston & Albany railroad has placed 1000 tons for bridge work and the total sales of the week are fully equal to those of the previous week.

New York, Feb. 24.—A firmer tone is reflected in plate prices. While 2.00c, base Pittsburgh, has not disappeared, buyers have to shop carefully to find it, and it has been reported recently only on attractive tonnages. The usual price is 2.10c, base Pittsburgh. New orders and specifications are not sufficient to replace shipments.

Pittsburgh, Feb. 24.—Plate mills continue to operate 90 per cent of capacity on the average, filling old orders, with most shipments going to railroad car shops. Deliveries are deferred several weeks, hence there is not much incentive to meet the 2.00c and 2.10c figures prevailing in the East. A few gas holder inquiries are pending. A riveted pipe line for a power company in Utah will take about 1500 tons.

Chicago, Feb. 24.—Freight car builders are taking a heavy tonnage of plates against old contracts, but new buying is light in keeping with spare buying of cars. The leading interest has booked 4000 tons for the 400 Southern Pacific ballast cars placed recently. A pipe line at Loveland, Colo., requires 1400 tons of plates, one at Vallejo, Calif., 1000 tons, and a pipe line and power house at Whellon, Utah, 1500 tons. Makers say they are holding to 2.30c, Chicago, on plates and have booked fair business from small buyers.

Cleveland, Feb. 24.—Despite the limited amount of new business prices show steadiness at 2.10c, Pittsburgh or 2.29c Cleveland. Some mills still ask 2.20c, Pittsburgh. Good-sized requirement contracts for several months ahead have been taken at going prices. Riveted pipe line inquiries are numerous, four or five being current, the largest being 5000 tons for Kansas City. Fabricators in this district are figuring. Two lake freighters which have been under negotiation and have been indefinitely postponed.

CONTRACTS PLACED

1400 tons, riveted pipe line, 48-inch and 60-inch, for the city of Providence, R. I., to Pittsburgh-Des Moines Steel Co.

400 tons, 10 tanks for Pan-American Oil Corp. at San Francisco, to Western Pipe & Steel Co.

CONTRACTS PENDING

1300 tons, 1.6 miles 66-inch and 0.3 miles 48-inch riveted steel pipe for Cranston, R. I., Charles A. Haggerty, Webster, Mass., has general contract.

1500 tons, riveted pipe line for a power company in Utah; bids being taken.

5000 tons, Kansas City; pending.

1400 tons, project in Colorado; pending.

Semifinished

New Inquiries To Test Sheet Bar Market; Some Selling Done at $39

SOME inquiries for sheet bars now pending probably will afford a test of prices. Negotiations are under way for substantial tonnages for the second quarter. Regardless of what these will develop, it is evident that $38 has not yet appeared as a factor. Some buyers in the Pittsburgh district claim to be able to purchase at less than $39, but there is no indication of any such transaction. A valley mill is understood to have closed at $39, Youngstown, on a fair tonnage after having refused 5000 tons a few days ago.

SEMIFINISHED STEEL PRICES, PAGE 582

Pittsburgh, Feb. 24.—Sheet bar inquiries have become more numerous this past week. Users profess ability to obtain quotations below $39, but none has been closed at that figure, and all makers are adhering firmly to it in this market. One sale of 1000 tons is noted at $39, Pittsburgh, and another smaller lot involving several carloads was taken by a Youngstown producer several days ago at $39, Youngstown, for shipment into this territory. This same producer recently refused an offer from one of its customers to buy 4000 tons at $39, Pittsburgh. The Apollo Steel Co. and a few other users are negotiating for second quarter tonnages of sheet bars, and these inquiries probably will furnish the market's test this week.

Billet inquiries are rare, but $38 appears to be the minimum quoted on open hearth 4 x 4-inch rerolling billets and slabs, with $39.50 to $40 quoted on small billets. Some shipments against $42.50 forging billet contracts are being made but on new business some makers will not quote less than $45. Wire rods are quoted at $48 to $50, the latter being the figure of the American Steel & Wire Co. Some holding to the former level have no more wire rods to offer for delivery prior to July and, of course, books have not been opened as yet for the third quarter or last half. Skelp is unchanged at 2.10c, with light demand.

New York, Feb. 24.—A strong condition is reflected here in the wire rod market. Some consumers have specified their entire first quarter contracts and now desire to place second quarter contracts with the option of specifying at least a portion of the second quarter tonnage, during March. The market is firm at $48 base Pittsburgh. An inquiry from Japan involves 10,000 tons of sheet bars. This has been pending for two weeks.

Philadelphia, Feb. 24.—Some makers have advanced wire rods $2, to $50, Pittsburgh, but the new price is not yet established. Small billet sales are noted at $37.50 to $38 Pittsburgh, for rerollers, and $42.50 to $43 for forging quality.

Youngstown, Feb. 24.—Reports of sheet bars available at $38, Pittsburgh, cannot be substantiated by producers here. While production schedules in this district would permit open market transactions, no effort is being made for additional business. Producers will quote $39, Youngstown, on inquiries for sheet bars. Business on a lower basis is not likely to be considered until some recession becomes apparent in the intermill demand. One sale of a few hundred tons of sheet bars was made last week at $39, Youngstown. No inquiry for this commodity is before makers at present. Large billets and slabs are quotable at $37.50, Youngstown with no sales reported. Wire rods are quotable at $48, Pittsburgh.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	15.00 to 15.50
Boston (dealers)	12.50 to 13.00
Buffalo	18.00 to 19.00
Chicago	17.75 to 18.25
Cleveland	17.50 to 18.00
Cincinnati (dealers)	14.50 to 15.00
Detroit	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.50
New York (dealers)	13.00 to 13.50
Pittsburgh	18.00 to 18.50
St. Louis	16.50 to 17.00
Valleys	18.50 to 19.00

COMPRESSED SHEETS

Buffalo	17.00 to 17.50
Chicago	14.50 to 15.00
Cleveland	14.50 to 15.00
Detroit	13.25 to 13.75
Pittsburgh	18.00
Valleys	17.50 to 17.75

BUNDLED SHEETS

Buffalo	13.00 to 13.50
Cincinnati (dealers)	11.00 to 11.50
Cleveland	12.25 to 13.00
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh	17.00
St. Louis	11.50 to 12.00
Valleys	16.00 to 16.50

SHEET CLIPPINGS, LOOSE

Chicago	11.00 to 11.50
Detroit	10.50 to 11.00

STEEL RAILS, SHORT

Birmingham	15.00 to 15.50
Detroit	18.00 to 18.50
Chicago	20.00 to 20.50
Cincinnati (dealers)	17.00 to 17.50
Cleveland (over 6 ft.)	17.50 to 18.00
St. Louis	19.50 to 20.00

STOVE PLATE

Birmingham	15.00 to 16.00
Boston (consumers)	14.50 to 15.00
Buffalo	16.00 to 16.25
Chicago	17.00 to 17.50
Cincinnati (dealers)	11.00 to 11.50
Cleveland	14.50 to 15.00
Detroit (net tons)	13.00 to 13.50
Eastern Pennsylvania	15.00
New York (dealers)	11.00 to 11.50
Pittsburgh	16.00 to 16.50
St. Louis	16.00 to 16.50

LOW PHOSPHORUS

Buffalo	20.50 to 21.00
Cincinnati (dealers)	16.50 to 17.00
Eastern Pennsylvania	21.00 to 22.00
Pitts. billet and bloom crops	24.50 to 25.00

SHOVELING STEEL

Chicago	17.50 to 18.00
Pittsburgh	15.00 to 15.50
St. Louis	16.50 to 17.00

KNUCKLES, COUPLERS, SPRINGS

Chicago	20.50 to 21.00
Eastern Pennsylvania	20.00 to 21.00
Pittsburgh	21.00 to 21.50
St. Louis	20.00 to 20.50

FROGS, SWITCHES, GUARDS

Chicago	18.00 to 18.50
Eastern Pennsylvania	16.50 to 17.50
St. Louis	17.50 to 18.00

ANGLE BARS—STEEL

Buffalo	20.50 to 21.00
Chicago	18.50 to 19.00
St. Louis	18.00 to 18.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	14.00 to 15.00
Boston (dealers)	15.00 to 16.00
Buffalo, No. 1	15.00 to 15.50
Buffalo, No. 2	18.00 to 19.00
Chicago, No. 1	18.00 to 18.50
Chicago, No. 2	17.50 to 18.00
Cincinnati, No. 1 (dealers)	12.50 to 13.00
Cleveland, No. 1	14.00 to 14.25
Eastern Pennsylvania	20.00 to 21.00
New York, No. 1 (dealers)	17.00 to 17.50
Pittsburgh, No. 1	15.00 to 15.50
Pittsburgh, No. 2	18.00 to 18.50
St. Louis, No. 1	16.50 to 17.00
St. Louis, No. 2	16.50 to 17.00

WROUGHT PIPE

Boston (dealers)	12.00 to 12.50
Buffalo	14.00 to 14.50
Eastern Pennsylvania	16.50 to 17.50
New York (dealers	12.25 to 12.75

YARD WROUGHT

Boston	14.00 to 15.00
Eastern Pennsylvania	19.00 to 20.00

BUSHELING

Buffalo	17.00 to 17.50
Chicago, No. 1	16.00 to 16.50
Chicago, No. 2	12.50 to 13.00
Cincinnati, No. 1 (dealers)	11.00 to 11.50
Cleveland, No. 1	14.75 to 15.00
Cleveland, No. 2	12.75 to 13.50
Eastern Pennsylvania	15.00 to 15.50
Pittsburgh, No. 1	16.00 to 16.50
St. Louis, No. 1	15.00 to 15.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston (dealers)	10.50 to 11.00
Buffalo	13.50 to 14.00
Chicago	11.50 to 12.00
Cincinnati (dealers)	11.50 to 12.00
Cleveland	13.50 to 14.00
Detroit	12.00 to 12.50
Eastern Pennsylvania	15.00
New York (dealers)	11.00 to 11.50
Pittsburgh	15.00 to 15.50
St. Louis	9.00 to 9.50
Valleys	15.00

CAST IRON BORINGS

Birmingham (chemical)	15.00 to 16.00
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	15.00 to 15.50
Boston (dealers)	10.50 to 11.00
Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Cincinnati (dealers)	12.00 to 12.50
Cleveland	14.75 to 15.00
Detroit	12.00 to 12.50
Eastern Pennsylvania (chem.)	19.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.00 to 11.50
Pittsburgh	15.00 to 15.50
St. Louis	14.00 to 14.50
Valleys	15.75 to 16.00

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.50 to 9.00
Cincinnati (dealers)	11.00 to 11.50
Cleveland	14.75 to 15.00
Detroit	11.75 to 12.25
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	10.25 to 10.75
Pittsburgh	15.00 to 15.50

PIPES AND FLUES

Chicago	14.00 to 14.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	11.50 to 12.00
St. Louis	12.00 to 12.50

RAILROAD GRATE BARS

Buffalo	15.00 to 15.50
Chicago	17.00 to 17.50
Cleveland	14.50 to 15.00
Eastern Pennsylvania	15.00
New York (dealers)	14.00 to 14.50
St. Louis	14.50 to 15.00

FORGE FLASHINGS

Boston (dealers)	11.50 to 12.00
Buffalo	15.00 to 15.50
Chicago	13.25 to 13.75
Cleveland (under 10 in.)	14.50 to 15.00
Cleveland (over 10 in.)	11.50 to 12.00
Detroit	12.50 to 13.00
Pittsburgh	16.00 to 16.50

FORGE SCRAP

Boston (dealers)	11.00 to 11.50
Chicago	21.00 to 21.50
Eastern Pennsylvania	15.00

ARCH BARS AND TRANSOMS

Chicago	23.75 to 24.25
St. Louis	21.50 to 22.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	11.00 to 11.50
Buffalo	15.00 to 15.50
Chicago	15.00 to 15.00
Cleveland	16.00 to 16.25
Eastern Pennsylvania	15.50 to 16.50
Pittsburgh	16.50 to 17.00
St. Louis	13.00 to 13.50

STEEL CAR AXLES

Birmingham	18.00 to 19.00
Boston (shipping point)	19.50 to 20.00
Buffalo	19.00 to 19.50
Chicago	21.50 to 22.00
Cleveland	18.00 to 18.50
Eastern Pennsylvania	23.00 to 24.00
Pittsburgh	21.50 to 22.00
St. Louis	20.50 to 21.00

SHAFTING

Boston (shipping point)	19.50 to 20.00
Chicago	21.50 to 22.00
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	19.50 to 20.50
St. Louis	19.00 to 19.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	16.00 to 17.00
Boston (consumers)	18.00 to 19.00
Buffalo	18.50 to 19.00
Chicago, iron	19.50 to 20.00
Chicago, steel	21.00 to 21.50
Cincinnati	12.50 to 13.00
Eastern Pennsylvania	18.00 to 19.00
New York iron (dealers)	16.00 to 17.00
Pittsburgh, iron	19.50 to 20.00
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	18.00 to 18.50
St. Louis, steel	20.00 to 20.50

NO. 1 CAST SCRAP

Birmingham, cupola	17.00 to 17.50
Boston	19.50 to 20.00
Buffalo	18.00 to 18.50
Chicago, No. 1 machinery	20.00 to 20.50
Chicago No. 1 railroad or agricultural	19.00 to 19.50
Cincinnati No. 1 Machinery cupola (net tons dealers)	19.50 to 20.00
Cleveland, cupola	17.50 to 18.00
Detroit (net tons)	16.00 to 17.00
Eastern Pennsylvania, cupola	18.00 to 19.00
New York, cupola (dealers)	16.00 to 16.50
Pittsburgh, cupola	18.50 to 19.00
San Francisco, delivered	24.00
Seattle	18.00
St. Louis, railroad	19.00 to 19.50
St. Louis, agricultural	19.00 to 19.50
St. Louis, machinery	20.00 to 20.50
Valleys	18.50 to 19.00

HEAVY CAST

Boston	17.50 to 18.00
Buffalo (breakable)	16.00 to 16.50
Cleveland	13.50 to 14.00
Detroit (automobile) (net ton)	19.00 to 20.00
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	15.00 to 15.50
Pittsburgh	15.50 to 16.00

MALLEABLE

Boston, railroad	19.00 to 20.00
Buffalo	19.50 to 20.00
Chicago, agricultural	18.50 to 19.00
Chicago, railroad	20.00 to 20.50
Cincinnati, railroad (dealers)	16.00 to 16.50
Cincinnati, agricultural (dealers)	15.50 to 16.00
Cleveland, agricultural	18.75 to 19.00
Cleveland, railroad	20.75 to 21.00
Detroit	18.00 to 18.50
Eastern Pennsylvania, railroad	15.00
Pittsburgh, railroad	20.00 to 20.50
St. Louis, agricultural	16.50 to 17.00
St. Louis, railroad	16.50 to 17.00

Miscel'aneous Scrap

RAILS FOR ROLLING
5 feet and over

Boston (dealers)	15.50 to 16.00
Chicago	19.00 to 19.50
Cleveland	17.50 to 18.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh district	20.50 to 21.00
St. Louis	18.00 to 18.50

LOW PHOSPHORUS PUNCHINGS

Chicago	20.00 to 20.50
Eastern Pennsylvania	20.00 to 21.00
Pittsburgh	21.00 to 21.50

Scrap

Weakness and Lower Prices in All Centers — Consumers Beat Sellers Down Steadily

CONSUMERS of iron and steel scrap have the whip hand and are forcing prices steadily lower, each transaction signaling a lower level. Prices are not yet sufficiently low to tempt dealers to lay down stocks for future profits. Heavy melting steel is in light demand at falling prices, to apply on contracts. Canadian melters have bought tonnage usually coming to Buffalo users. Further declines are expected before strength reappears and buyers and sellers are awaiting developments of the next two or three weeks.

Chicago, Feb. 24.—Iron and steel scrap is weaker, following an optimistic bulge early last week. Following the purchase of a large tonnage of heavy melting steel by Inland Steel Co. at a reported $18.50, this grade appears to have receded and ideas of price go as low as $17.50. The majority opinion in the market is that heavy melting steel will settle to about $17.50 and hang there for some time, although bearish sentiment prevailing right now would seem to make for a still lower price. Malleable and cast grades have been more active because of dealer covering; one interest has been offering up to $21, gross, for malleable and $17.50, net, for cast but now claims it can do better. The Burlington railroad is offering 6000 tons of scrap and the Santa Fe 2000.

New York, Feb. 24.—Further reductions are noted in iron and steel scrap. Possibly the largest is in heavy cast, this material dropping off, holding at $15, to $15.50 f.o.b. New York. Dealers have also lowered their buying prices on machinery cast 50 cents per ton. New business continues slack, and the great bulk of shipments being against back orders.

Philadelphia, Feb. 24.—Dealers continue to buy scrap for shipment on contracts but consumers generally are apathetic, as they are comfortably covered for the most part. The latter are not satisfied with the outlook for their finished product. As a result the downward tendency of prices continues.

Buffalo, Feb. 24.—Dealers are giving the scrap market its major activity. They are in the market for heavy melting steel for shipment to the Bethlehem and Donner companies and other recent purchasers, this demand holding prices fairly steady within a range of $18 to $19. Buffalo dealers report a Canadian consumer is buying heavy melting steel, paying $14 to $15 for tonnage that otherwise would come into this market. This price figures slightly more than the average Buffalo quotation of $18.50. This is the first substantial purchasing in the lower Ontario district in some time.

Pittsburgh, Feb. 24.—While the bottom has not entirely dropped out of the scrap market, it is completely in consumers' hands. Consumers buy at 50 cents to $1 less than preceding purchase, and then revise their offers again downward by 50 cents to $1 per ton. A few dealers are covering shorts and some would pay $18.50 on heavy melting steel for delivery to certain points, but at other points they would not pay $18. Yards, while not empty, are well sold up but real support created by dealers buying for their yards will not come about until the market reaches $17.

Cleveland, Feb. 25.—Trading is almost dormant with Cleveland district iron and steel scrap dealers. Consumers not only display no interest in new tonnage but are holding up shipments applying on contracts. This applies only to certain grades on which they are heavily stocked. Prices, in consequence of this condition, have sloughed off considerably in the past week although quotations are largely nominal because of the absence of trading.

Cincinnati, Feb. 23.—Iron and steel scrap continues quiet so far as consumer buying is concerned but dealers are active. Heavy tonnage has been taken on by local dealers recently including large quantities of railroad scrap. The bulk of this material was bought by the dealers at low prices. Users do not find it difficult to pick up tonnages at their own figures.

Detroit, Feb. 24.—Practically no buying and little selling is being done in iron and steel scrap. The market is stagnant and prices continue to fall.

St. Louis, Feb. 23.—Iron and steel scrap is dull and featureless. There have been further specific reductions among the items affected being machine shop turnings, railroad miscellaneous scrap, rails for rolling, malleable and county mixed scrap. On many items which were unchanged prices are nominal, there having been no transactions upon which to base quotations.

Birmingham, Ala., Feb. 23.—Sales are few and quotations uncertain in iron and steel scrap. Delivery on contracts continues active. Much encouragement is taken on the fact that Tennessee Coal, Iron & Railroad Co. is in the market.

Sheets

Slack Business Leads to Further Price Easiness—Black Sold at Less Than 3.50c.

KEEN competition and price concessions are the principal features in the sheet market. Despite the fact specifications are holding up fairly well, some mills in the Pittsburgh and valley districts are in need of tonnage. Shading of prices is noted most frequently on black sheets. Less than 3.50c has been done by automobile buyers though the more general figure is 3.50c to 3.60c. Certain mills are offering galvanized at 4.75c for prompt and second quarter delivery, while others are asking 4.85c for the latter period.

SHEET PRICES, PAGE 582

Pittsburgh, Feb. 24.—Specifications are continuing to come in fairly well to most sheet producers, although new business is slack. The position of galvanized and blue annealed is stronger than that of black or full-finished. While shipping instructions on full-finished sheets are gaining in number and a few of the automobile companies are placing hurry-up orders, buyers still are cautious. In galvanized and black sheets, mills are unbalanced. The American Sheet & Tin Plate Co. is heavily committed at eastern mills but could take care of more galvanized tonnage at Ohio and Pennsylvania works where it has an excess of black sheets. It continues to operate silghtly above 85 per cent and independents somewhere between 80 and 85 per cent. Price concessions still appear. They are more numerous in black sheets than in any other grade, 3.50c and even lower being quoted in the competitive prompt market. Some makers will not go below 3.60c for this quarter and 3.70c is being named for next quarter. A few contracts have been booked at the latter figure for shipment after April 1. In galvanized, the 4.75c figure is named for early delivery but 4.85c is firm for second quarter and most producers are not anxious for material at that price owing to high spelter. Some independents as well as the leading interest have booked second quarter business at 4.85c. Blue annealed is quoted at 2.70c to 2.80c and full finished at 4.60c to 4.75c.

Chicago, Feb. 24.—Sheetmakers in this district are encouraged by the response to their efforts for second quarter business. They report some of the larger users have committed themselves at the $2 advance. Jobbers apparently have not yet come into the market for the second quarter. Some weakness is reported at Memphis and other southern and southwestern points, but the Chicago market is claimed to be well held

on the basis of 3.85c for black sheets, 5.00c for galvanized and 2.95c for blue annealed.

Youngstown, Feb. 24.—Competition in the sheet market continues keen. While producers have attractive tonnages under contract specifications have not prevented the solicitation of prompt rollings. Blue annealed sheets are stronger than the other two grades. Producers are entering business at 2.70c. While 3.70c is quoted on black by some makers little business is resulting. Some mills still are quoting 3.50c while business at 3.60c is being written on the books of many of the old established producers. At the same time a lot of 500 tons carrying attractive extras was purchased, the past week by a Detroit automobile builder considerably under 3.50c base. In the case of galvanized, 4.75c still is a market factor and second quarter business has been placed on this basis. Demand for high grade sheets has undergone no change. Consumers are edging into second quarter by placing tonnage for April delivery. The price of 4.60c, which has applied to first quarter, is being named on tonnage for delivery during the first month of next quarter. According to estimates of some producers based on present conservative methods of buying, much of the tonnage scheduled for April production will be rolled in March. An increase in demand for high grade sheets is not anticipated until producers of automobiles reach an output of 330,000 cars a month.

Philadelphia, Feb. 24.—Sheetmakers show more desire for tonnage. Prices accordingly are easy. Black sheets are easily obtainable at 3.50c, Pittsburgh, for nearby or second quarter, with less in some instances. Prices of galvanized sheets are not much tested. Generally they are 4.75c, Pittsburgh. Some makers ask 4.70c. Blue annealed sheets are 2.70c to 2.80c.

Tin Plate

Good Specifications Continue as Principal Feature of the Market

TIN PLATE PRICES, PAGE 582

Pittsburgh, Feb. 24.—Tin plate makers are maintaining high operations, specifications being liberal. One user ordinarily taking less than 50,000 base boxes monthly has just specified twice as much for April shipment as it ever specified in any one month before. Operations on the part of the leading interest are increasing and this week about 82 per cent of tin plate mills will be scheduled, as against slightly less than 80 per cent last week. The general average for the district is still above 90 per cent. The domestic price is unchanged at $5.50 per base box.

New York, Feb. 24.—Specifications for tin plate continue heavy and some makers believe they will be unable to produce all the tonnage wanted during the first half. Stock tin plate continues to range from $4.90 to $5.15 per base box Pittsburgh.

Strip Steel

Demand Somewhat Slacker and Little Second Quarter Closed

STRIP PRICES, PAGE 582

Pittsburgh, Feb. 24.—Business in strip steel, especially hot-rolled, has slackened considerably. A few contracts have been written for second quarter. Hot strip makers are quoting 2.50c, base, with the new card of extras applying but 2.40c, base, is quoted for this quarter. A few special cases are known where lower prices have been developed from producers in West Virginia and northern Ohio on large tonnages, or attractive rollings of heavy material. Most cold strip makers are adhering firmly to 4.15c but a few makers have quoted 4.00c in meeting competitive conditions.

New York, Feb. 24.—Prices on cold-rolled strip steel continue to show some variation. On most business the figure is 4.00c base Pittsburgh and prices under that are disappearing. In some instances, 4.15c is being done.

Pipe

Oil Country Demands High for Pipe—Cast Iron Buyers Begin Spring Activity

DEMAND for pipe by jobbers specifying oil country goods are maintained at a high rate, enabling mills to continue operations above 90 per cent. Increased prices have stimulated activity in the oil fields and line pipe inquiries are being rumored. Cast iron pipe programs are being formulated for spring needs, and buying is increasing. Interest in the East centers around the closing of bids on March 3 by the city of New York on 7000 tons. Prices continue firm.

PIPE PRICES, PAGE 582 AND 616

Pittsburgh, Feb. 24.—Jobber specifications for oil country goods together with new orders for 50 to 300 tons or slightly more at a time for line pipe, casing and drive pipe, etc., are fairly numerous. Pipe mills are able to operate on an average slightly in excess of 90 per cent. Shipments are high although in some case pipe mills are building up their own stocks against spring demand. While some new business in standard full weight pipe comes out each week, it mostly is in small lots and is expected to be heavier as spring approaches when building programs are mapped out. Buttweld pipe business is heavier than lapweld in the standard full weight grade.

Chicago, Feb. 24.—A large volume of small business has come to cast iron pipe makers lately. Bookings are slightly better than shipments, on the average. Commitments of makers average about six weeks. The price range on cast iron pipe 6 inches and over continues $49.20 to $50.20, delivered Chicago, with 4-inch pipe quoted $4 higher.

Birmingham, Ala., Feb. 24.—Spring trade in cast iron pressure pipe has started earlier than usual and some producers are reporting accumulating orders. Quotations remain at $40 per ton, base, 6-inch and over. Shipments are steady. Several large specifications are reported. Soil pipe making shows no abatement.

CONTRACTS PLACED

850 tons, St. Paul, to Lynchburg Foundry Co.
100 tons, Alliance, O., to James B. Clow & Sons.

CONTRACTS PENDING

1000 tons, 12 and 16-inch cast iron pipe for Mt. Vernon, N. Y.; John Fox, general contractor.
1200 tons, pipe for White Plains, N. Y.; Vito Cestone, White Plains, low on general contract.
2000 tons, Duluth; James B. Clow & Sons low bidder.
500 tons, Highland, Ill.; bids in.

Bolts, Nuts, Rivets

Three Basing Points Adopted With Identical Discounts

NUT AND BOLT PRICES, PAGE 582

Pittsburgh, Feb. 24.—Some makers of nuts and bolts have discontinued quoting delivery prices in territory east of the Mississippi and north of the Ohio rivers. This plan has been superseded by three identical basing points, Pittsburgh, Cleveland and Chicago. The same discounts that have been quoted continue in force f.o.b. those three points, with 50, 10 and 10 off on large machine bolts. While earlier than usual, this marks the opening of books for second quarter since producers are willing to accept business on this new basis for delivery in that period. Operations among rivet makers are increasing. One reports operating practically full and is putting on additional machines this week as men are found. Another large rivet maker nearby has been shut down for two weeks but started up partially yesterday. The former has been been booking heavily from structural

shops, car shops, etc., and has just received some attractive business for export through New York jobbers. The open market figure still is 2.60c but this sometimes has been shaded to 2.55c or even 2.50c on attractive business.

Chicago, Feb. 24.—Specifications and new business in bolts and nuts have developed a slight spurt. Production continues ahead of new business and appears to warrant a reduction shortly, but makers are hopeful a turn about March 1 will prevent this. Second quarter prices are under discussion and a decision may be reached by the end of this week. Bolt and nut prices continue on the basis of 50, 10 and 10 off for large machine bolts.

Cleveland, Feb. 24.—Bolt and nut makers in this district have gone back to the old method of quoting and for the most part now are naming Cleveland, Pittsburgh or Chicago as bases, depending upon the location of the consumer. The change, according to makers, was desired by the majority of consumers.

Second quarter books have been opened at the same prices as have prevailed during the first quarter, namely 50, 10 and 10 per cent off for large bolts. Business is only fair.

Quiet rules in the rivet trade. Orders are small although fairly numerous. Prices are unchanged. Second quarter books will not be opened until next month.

Philadelphia, Feb. 24.—Bolts, nuts and rivets are marking time. Fair specifications on contracts are being received but new demand is small. Prices are fairly firm. Large machine bolts are quoted at 50 and 10 off, and rivets at 2.60c to 2.65c, Pittsburgh, with some makers asking 2.90c.

Hoops and Bands

Second Quarter Buying Is Expected To Develop Soon

HOOP PRICES, PAGE 582

Pittsburgh, Feb. 24.—Present buying in hoops and bands is more extensive than on wider hot strips. More purchasers are active in the market, including some automotive users and individual tonnages are slightly larger. Large buying however, has not started for second quarter but this is expected soon. Producers quote 2.40c to 2.50c on hoops and bands on the new card of extras.

Cold Finished Steel

Orders Being Received In Enlarged Volume by All Makers

Pittsburgh, Feb. 24.—Orders for cold-finished bars the past few days have shown considerable improvement. More specifications and more inquiries have developed and second quarter buying has started. Demand is well diversified and prices are strong at 2.80c, base. Operations are 65 to 80 per cent of capacity.

Bars

Test of Prices on Second Quarter Buying, No Weakness Evident—Consumption Strong

WHILE specifications on steel bar contracts are being filed fully as contracts carry lower prices than present quotations, it appears likely second quarter tonnages will bring a test of price. New buying is relatively light but as mills have business to occupy them well into second quarter, sellers are in easy position. Prices generally are firm to strong, except for some local weak spots where smaller producers seek business to keep their plants occupied. Specifications for bar iron are more encouraging.

BAR PRICES, PAGE 582

Chicago, Feb. 24.—Now business in soft steel bars continues light and comes almost entirely from small consumers. Large buyers as a whole are not showing interest in second quarter and mills are not pushing them. That the market is entering a test period, as to price, is conceded by producers. It is claimed that business taken so far has been strictly on the basis of 2.20c, Chicago, or $2 higher than the first quarter price. One maker has booked 2000 tons, including bars, plates and shapes, at 2.20c for the bars and 2.30c for the plates and shapes. Pressure from reinforcing bar sellers for deformed billet bars is severe. Bolt and nut makers and tractor interests have been market factors. Production of soft steel bars is unchanged at 100 per cent, and while specifications against first quarter contracts naturally decrease as the quarter wanes, they about balance shipments.

Specifications for bar iron have been slightly heavier the past week, but less than shipments. Backlogs have prevented reduced operations thus far. The bar iron range still is 2.00c to 2.15c, Chicago.

Rail steel bar bookings continue fair, with the most general quotation 2.10c, mill, or 2.13c, Chicago.

Boston, Feb. 24.—Bar sales to date in 1925 in New England show a 20 per cent increase over sales of the same period in 1924, according to estimate of leading sellers. The price of 2.565c delivered which eastern mills are attempting to establish is somewhat shaky as small mills are offering bars at 2.465c delivered. Sales of the past week are slightly under those of the previous week.

New York, Feb. 24.—Specifications against first quarter steel bar contracts are reported as fairly heavy. In fact, some mills are receiving more tonnage than in January. Indications are that these are based generally on actual consumptive needs, and there is no indication of any general disposition to build up stocks.

In some cases consumers who had placed contracts for December, January and February have extended them through March on the basis of 2.10c base Pittsburgh. It now is difficult to place steel bar tonnage below 2.10c and in a few instances carloads have brought 2.20c base Pittsburgh.

Pittsburgh, Feb. 24.—Possibly because merchant steel bar contracts being worked out carry prices around 2.00c and 2.10c, specifications are full. Bookings are so extensive that already on some sizes, with bar mill operations as near 100 per cent as they can get, they are filled up through April. Producers are not showing anxiety over failure of customers to make second quarter contracts. Only a few of the latter have been signed but anything that has been sold has been at 2.20c.

Demand for refined iron bars is a trifle less active but prices are unchanged at a 3.00c minimum.

Youngstown, O., Feb. 23.—One producer of common steel bars in this district is unwilling to sell second quarter tonnage below 2.20c, Pittsburgh. On the other hand 2.10c has not disappeared and the market is quoted from 2.10c to 2.20c. Little tonnage is coming out at the maximum figure. Production schedules are on the basis of about 75 per cent.

Buffalo, Feb. 24.—Bar demand has tapered off within the past ten days and is lower than it was during the first six weeks of the year. Prices are steady, sellers quoting 2.465c, Buffalo basis. Reduced demand has resulted in at least one open-hearth being closed by a Buffalo bar maker although suspension is said to be for relining.

Cleveland, Feb. 24.—New business in steel bars is moderate, the mills maintaining their operations on specifications against old orders. Some large produeers, however, report receipt of very fair new tonnage. For most mills next week will tell the story how freely March quotas, included in first quarter contracts will be specified. Heretofore, first quarter tonnages priced well below current prices have been actively taken out. Prices range from 2.10c to 2.20c, Pittsburgh to 2.29c to 2.39c, Cleveland.

Fluorspar Moves Well

New York, Feb. 24.—Sales of foreign fluorspar are being made for shipment as far inland as Buffalo and Pittsburgh but this business is small.

The market may be quoted at $19 to $19.50 per gross ton duty paid tidewater for the 85 and 5 per cent grade. This is equivalent to $17.50 duty paid per net ton.

Structural Shapes

Awards Continue Numerous—New York Placements Aggregate 25,000 Tons—Mill Specifications Lengthening Deliveries

AWARDS of structural shapes, featured by the placing of 25,000 tons in New York, are being maintained at the high average of 1925. Subway work in New York took 8300 tons, while a municipal repair shop accounted for 7000 tons. Large tonnage projects are pending, and increased activity is expected to return to the market shortly. Architects' boards are well filled with prospective construction work and estimating departments of fabricators are rushed in some districts. Deliveries in the Chicago district are extended from 60 to 70 days. The Stevens hotel at Chicago is expected to be let within two weeks, the project involving 17,000 tons. Plain material prices show a tendency to steady at the equivalent of 2.10c, Pittsburgh, although some mills still quote from 2.00c to 2.20c, Pittsburgh.

STRUCTURAL SHAPE PRICES, PAGE 582

New York, Feb. 24.—Approximately 25,000 tons of structural steel has been awarded during the past week. Featuring awards was the placing of 8300 tons for subway work, 7000 tons for a main transit repair shop at Coney Island, N. Y., and 3500 tons for the Tex Rickard building. Bethlehem Steel Co. bid $96.06 erected on the repair shop, the next three bidders all being within $1 of that bid. Plain material is steady at 2.10c, Pittsburgh.

Boston, Feb. 24.—Structural awards have shown smaller steel totals during the past week than in several weeks. Inquiry is strong. Plain material is firm at 2.465c delivered or 2.10c Pittsburgh.

Pittsburgh, Feb. 24.—Considerable revival is noted in the structural shape market this week from an inquiry standpoint. Several fabricators report inquiries more active than in any week since Jan. 1. Prices quoted usually are 2.10c to 2.20c, with a decided tendency to adhere firmly to the maximum for the second quarter. A few protections still are out at 2.10c.

Cincinnati, Feb. 24.—Activity in the structural steel market here is confined principally to small lots, only one local award involving more than 100 tons. Several large projects are pending and fabricators are figuring on a number of sizeable tonnages. Plain material ranges from 2.10c to 2.20c base Pittsburgh, with the bulk of the business going at the former quotation.

Cleveland, Feb. 24.—Little structural tonnage was sold in this territory during the past week. Inquiries continue numerous but awards few. Plain material prices hold at 2.29c to 2.39c Cleveland or 2.10c to 2.20c, Pittsburgh, with the minimum figure being prevalent on going business.

Chicago, Feb. 24.—Large buyers of shapes have not yet acted on second quarter business but some smaller users are said to have placed business at 2.30c, Chicago. Specifications against first quarter business are heavy and 60 to 70-day delivery is the best promised. The market is entering a test period on the advanced second quarter price. Inland Steel Co. probably will use 2000 tons of shapes, in addition to 2500 tons of plates for a blast furnace, for proposed enlargements and the Youngstown Sheet & Tube Co. may require a like tonnage for extensions at Indiana Harbor.

Philadelphia, Feb. 24.—Structural shapes reflect some softness. The recent advance has not held and the current market ranges from 2.00c to 2.10c, base Pittsburgh. Mills would hesitate to book second quarter tonnage under 2.10c, but consumers are not interested so there is no test on second quarter prices. Operations tend to a lower level with specifications not equal to shipments.

Awards Compared

	Tons
Awards this week	47,824
Awards last week	14,948
Awards two weeks ago	27,709
Awards this week in 1924	24,591
Average weekly awards, January	46,168
Average weekly awards, 1925	38,986

CONTRACTS PLACED

12,000 tons, open-hearth buildings for Ford Motor Co., Detroit, to Whitehead & Kales Iron Works.

8300 tons, two subway sections on Nicholas avenue, New York; to American Bridge Co.

3200 tons, high school, Jamaica, L. I., N. Y., reported awarded by Lustbader Construction Co., 101 Park avenue, New York, to American Bridge Co.

7000 tons, main transit repair shop, Coney Island, New York, to Bethlehem Steel Co.

3500 tons, Tex Rickard building, New York, to Taylor-Fichter Steel Construction Co.

2700 tons, building for Standard club, Chicago, through Mellon-Stuart Co., Pittsburgh, to Inland Steel Co.

2136 tons, office for R. E. Sterling, Houston, Tex., to Pennsylvania Car Co.

1500 tons, bank building at Cedar Rapids, Iowa, to Iowa Steel & Iron Works.

1481 tons, Y. M. C. A. annex, Chicago, to American Bridge Co.

1093 tons, Belmont theater, Lubliner & Trinz, Chicago, to A. Bolter's Sons. Reported last week as 950 tons.

750 tons, Master Craftsman's building, Flushing, L. I., N. Y., to Shoemaker Bridge Co.

600 tons, loft at 241 West Thirty-sixth street, New York, to Lehigh Structural Steel Co.

900 tons, municipal pier, No. 2, New York, by O'Day Construction Co., reported to American Bridge Co.

125 tons, building for Pennsylvania Wire Glass Co., Dunbar, Pa., to McClintic-Marshall Co.

125 tons, generator building for U. G. I. Contracting Co., Conshohocken, Pa., to McClintic-Marshall Co.

200 tons, Berryhill Malleable Iron Co., Evansville, Ind., to A. C. Woods Co., Rockford, Ill.

300 tons, three branch buildings for Y. M. C. A., Chicago, to American Bridge Co.

192 tons, ore crushing plant for Scranton mine, Hibbing, Minn., to Lakeside Bridge & Steel Co.

112 tons, foundry for Mechanics Iron Foundry, Roxbury, Mass., to Boston Bridge Works.

100 tons, Bishop garage, Worcester, Mass., to Eastern Bridge & Structural Co.

110 tons, theater, Concord, N. H., to New England Structural Co.

100 tons, Muskegon Machine Co., Newburgh, N. Y., to Fairmont Mining Machinery Co.

300 tons, bridgework for Southern Pacific railroad, to unnamed fabricator.

200 tons, Young's pier, Atlantic City, N. J., to New York Shipbuilding Co.

100 tons, waste heat boiler room for American Steel Foundries, East St. Louis, Ill., to McClintic-Marshall Co.

200 tons, addition to Plastergon Wall Board Co. plant, Buffalo, to Pittsburgh Bridge & Iron Works.

400 tons, Louisville & Nashville railroad bridge, to the Penn Bridge Co.

900 tons, plant at Chillicothe, O., for the Mead Pulp & Paper Co., to McClintic-Marshall Co.

150 tons, Bancroft hotel addition, Saginaw, Mich., to unnamed fabricator.

CONTRACTS PENDING

5000 tons, tube between Alameda and Oakland, Calif.; alternate bids to be taken on reinforced concrete.

3000 tons, bridge work for Chicago & Northwestern railroad at Milwaukee; pending.

2500 tons, hotel at Cicero, Ill.; pending.

2000 tons, pottery building, Trenton, N. J.; pending.

1600 tons, coal handling plant for Consolidated Gas Co., Hunts Point, New York; pending.

1400 tons, office for Morrow Realty Co., 135 West Thirty-sixth street, New York; pending.

1000 tons, hospital, Germantown, Pa.; pending.

1000 tons, building for Nash Motors Co. at Milwaukee; pending.

900 tons, Cornish Arms hotel, 311 West Twenty-third street, New York; pending.

300 tons, armory, Madison avenue and Thirty-fourth street, New York; Lewis F. Pilcher, 292 Madison avenue, architect.

400 tons, school No. 65, New York; pending.

440 tons, bridge work for Illinois Central railroad; pending.

350 tons, Sacred Heart church, Shady avenue and Walnut street, Pittsburgh; bids in March 5.

300 tons, addition to Pittsburgh hospital, Frankstown avenue; bids closed Feb. 25.

200 tons, church of the Annunciation, Charles and Linwood streets, Pittsburgh; bids opened last week.

100 tons, Tuberculosis hospital, 2851 Bedford avenue, Pittsburgh; bids to be taken. E. P. Mellon, Pittsburgh, architect.

500 tons, power house, Saxton, Pa.; pending.

750 tons, municipal inspection shed, Corona, L. I., N. Y.; bids in Feb. 27.

500 tons, annex, Federal Reserve bank, Philadelphia; pending.

500 tons, hotel, Alexandria, Va.; pending.

155 tons, Elks club, Santa Barbara, Calif.;

postponed indefinitely.

348 tons, Commercial club, San Jose, Calif.; held up temporarily.

400 tons, Atwater-Kent Co. building, Philadelphia; postponed.

300 tons, church, 128 West Thirty-seventh street, New York; R. J. Reilly, 50 East Forty-first street, that city, architect.

180 tons, New Jersey College of Pharmacy, Newark, N. J.; pending.

Tonnage unstated, 36-story addition to Roanoke building, Chicago. Previously reported but building permit now issued. Holabird & Roche, 104 South Michigan avenue, Chicago, architect.

Tonnage unstated, 14-story building for United Department Store, Park Square, Boston; preliminary plans drawn.

Concrete Bars

Inquiry and Orders Increase —Estimating Departments Rushed—Prices Firm

CONCRETE bar inquiries are showing a steady increase in volume, although these have not been reflected in a great gain in orders. In Chicago, estimating departments of some interests are working four nights a week. A large amount of work is on architects' boards and in estimators' hands. Small tonnage awards continue to predominate, but more large projects are being estimated. Prices have shown some weakness following the general revision upwards recently.

REINFORCING BAR PRICES, PAGE 582

Cleveland, Feb. 24.—Large tonnages remain lacking in the local concrete bar market. Spring building demand still is confined to preliminary estimates, although a good aggregate tonnage is pending. New billet bar prices remain 2.29c to 2.39c, Cleveland or 2.10c to 2.20c, Pittsburgh, with the bulk of business going at the former level. Rail steel is quotable from 1.90c to 2.00c, mill. Cleveland stock bars still are going at 3.10c local warehouse.

Boston, Feb. 24.—The recent increase in reinforcing bar inquiry as yet has not developed into orders. Awards of the week have been mostly under 100 tons. The price ranges from 3.15c to 3.40c Boston warehouse.

Pittsburgh, Feb. 24.—The majority of awards in reinforcing concrete bars still involve small lots, typical jobs involving less than 10 tons. Prices are quoted at 2.10c to 2.20c, the latter for second quarter. Quotations on warehouse stocks for delivery in the second quarter run as high as 2.55c.

Buffalo, Feb. 24.—Outlook is for brisk demand for reinforcing bars this spring. Large projects involving several thousand tons of bars will reach contract stage soon. The newest of these is the Buffalo-Fort Erie bridge, to cost $3,500,000. The exact tonnage on this job has not been figured. Small lots are being sold to road builders. Current quotations are: Bars from mills, 2.365c, Buffalo; stock shipment, 2.55c to 2.85c, Buffalo.

Cincinnati, Feb. 24.—Individual reinforcing bar awards involve from 25 to 75 tons, mostly for prompt shipment. Road and sewer work proposed in southern Ohio and northern Kentucky will require considerable tonnage. New billet bars out of warehouse are quoted at 3.30c, base Cincinnati.

Chicago, Feb. 24.—Several reinforcing bar warehouses have had their estimating departments working four nights a week. Several jobs requiring over 1000 tons each are developing. On new work the general quotation is 2.70c, warehouse, but some hangover jobs quoted at the former level of 2.60c have not yet been closed.

St. Louis, Feb. 23.—Reinforcing bar activity still is confined to small lot awards. Laclede Steel Co. booked 675 tons in two jobs last week and small projects aggregate a good total. Most small tonnage buying is coming from railroads, highways and municipalities. Prices are unchanged.

Awards Compared

	Tons
Awards this week	5,085
Awards last week	7,150
Awards two weeks ago	9,236
Awards this week in 1924	8,550
Average weekly awards, January	4,686
Average weekly awards, 1925	6,694

CONTRACTS PLACED

2000 tons, mill building for Inspiration Copper Co., Inspiration, Ariz., to unnamed western mill.

300 tons, Milwaukee county dormitory, Wauwatosa, Wis., to American System of Reinforcing.

100 tons, senior high school at Fond du lac, Wis., to American System of Reinforcing.

100 tons, plant at Hopewell, N. J; through William Steele & Sons, Philadelphia, to McClintic-Marshall Co.

700 tons, National Lock Co., Rockford, Ill., to American System of Reinforcing.

320 tons, two schools in Chicago, to Concrete Steel Co.

160 tons, school, Chicago, to Concrete Engineering Co.

100 tons, school, Cairo, Ill., to Olney J. Dean & Co.

425 tons, new Roxana Petroleum Co., St. Louis, to the Laclede Steel Co.

250 tons, Snyder-Harvey building, Wichita Falls, Tex., to Laclede Steel Co.

370 tons, Western Electric Co. buildings at Kearny, N. J., to Concrete Steel Co., general contractor, Turner Construction Co. This is in addition to 450 tons recently awarded the Donner Steel Co.

160 tons, New York state hospital buildings, Letchworth Village, Thiels, N. Y., to McClintic-Marshall Co., general contractor, Carlton Co.

100 tons, Bolivar road substation of Cleveland Electric Illuminating Co., Cleveland, to Bourne-Fuller Co.

CONTRACTS PENDING

1000 tons, Missouri highway commission road construction; bids in Feb. 28.

100 tons, addition to Museum of Fine Arts, Boston; bids being taken. General contract to L. P. Soule & Son.

400 tons, Augusta hospital, Chicago; bids in.

400 tons, Great Lakes Naval Training station, Great Lakes, Ill.; bids in.

300 tons, McCallum apartments, Germantown, Pa.; pending.

600 tons, Reading railroad grain elevator, Philadelphia; pending.

100 tons, Bancroft school, Wilmington, Del.; H. John Holman, Philadelphia, general contractor.

100 tons, Federal Engineer's office, Milwaukee; bids in March 12.

100 tons, garage building for the White Transfer Co., Pittsburgh; bids again being considered.

800 tons, storage buildings for A. Schrader's Son, Inc., Brooklyn, N. Y.; general contract to Turner Construction Co.

150 tons, First National bank building, Utica, N. Y.; pending.

150 tons, switch house, Kearny, N. J. for Public Service Production Co., pending.

150 tons, Union county court house, Elizabeth, N. J., redesigned plans call for 50 tons, of which part let to Igoe Bros., and remainder pending. General contract to Fred Kilgus.

200 tons, high school, Jamaica, N. Y.; Lustbader Construction Co., New York, low bidder.

Tonnage, unstated, 10 miles of road construction, from Scranton, Pa., to New York state line, general contract to Public Service Production Co., Newark, N. J.

Tonnage unstated, 5-story hotel for Victor G. Williams, 25 East Washington boulevard, Chicago. Norman Bridges, 5 North LaSalle street, Chicago, drawing plans.

Tonnage unstated, 6-story building for Home Bank & Trust Co., 1231 Milwaukee avenue, Chicago. Bids March 10. K. M. Vitzhum & Co., 605 North Michigan avenue, Chicago, architect.

Tonnage unstated, Western Union Co. building, St. Louis; general contract to Dwight P. Robinson Co., Inc.

Iron Ore

Buyers Asking for Larger Allotments on Term Contracts

Cleveland, Feb. 24.—The feature of the Lake Superior iron ore market this week is the fact several large consumers have asked to increase their allotments for this year on long-term contracts. One of these is for more than 100,000 tons additional, and certain producers estimate the total extra tonnage involved is around 500,000 tons. In such cases the ore interests having the contracts are given first opportunity to submit prices. No open market inquiries have developed since the Ford Motor Co. asked for prices a week ago. Leading producers state that it will be several weeks before prices are unchanged, owing to conditions in the pig iron market.

The Lake Superior Iron Ore association gives the following data pertaining to consumption and balances on docks and at furnaces:

	Tons
Ore consumed in December	4,541,866
Ore consumed in January	5,241,992
Increase in January	700,126
Consumed in January, 1924	4,687,947
Ore at furnaces Feb. 1, 1925	24,429,875
Ore on Lake Erie docks Feb. 1, '25	6,723,719
Total at furnaces and Lake Erie docks, Feb. 1, 1925	31,153,594
Total at furnaces and Lake Erie docks, Feb. 1, 1924	33,990,920

The Market Section

Rails, Cars

Car Buying Light—Rail Awards Trickle in to Mills—Locomotive Orders Good

CAR buying continues light, with the award of 1200 box and 400 gondolas by the Rock Island as a feature. Car builders are taking a heavy steel tonnage on old contracts. Awards of rail tonnages trickle in to mills, the New York Central exercise of option to take its full 184,650-ton rail order of October being the chief activity of the week. Locomotive inquiries and sales are in good volume. Germany and American Locomotive Co. close on 50 for a Brazilian road and St. Louis-San Francisco 30 from Baldwin.

RAILROAD TRACK MATERIAL PRICES, PAGE 582

New York, Feb. 24.—Car buying is featured by award of 1600 by the Rock Island. Locomotive buying includes 30 for the St. Louis-San Francisco and 10 narrow gage locomotives for the Denver & Rio Grande Western, both orders going to the Baldwin Locomotive Works. This builder also has taken orders for five locomotives for the Midland Valley, and three single locomotive orders. The Southern Pacific has bought a rotary snow plow from the American Locomotive Co. The Soracabana Railway of Brazil has ordered nine locomotives from the American Locomotive Co., and 50 from Germany, that order being divided between the Krupp works and Richard Hartmann Co.

Among pending inquiries are five for the Central of Georgia, four for the Kansas City, Mexico & Orient and three switch engines for the Carnegie Steel Co. The Chicago, Rock Island & Pacific is inquiring for ten 2-10-2 type locomotives.

Pittsburgh, Feb. 24.—Spasmodic purchases are taking place in the billet-rolled light rail market. Orders are for minimum carloads. While some business has been lost to those quoting 1.80c, others quote as high as 1.90c.

The track accessory market was featured this past week by the distribution of orders for 1,000,000 tie plates by the Baltimore & Ohio railroad. A large local independent steel company sharing in this business states that 2.35c was the minimum obtained. Several inquiries are pending, similar to that of the Ann Arbor railroad for 25,000 to 50,000 tie plates. Little spike inquiry is current. On standard spikes, 2.90c has been shaded slightly on attractive specifications.

Chicago, Feb. 24.—Western railroads now are specifying rails and track fastenings beyond the capacity of local makers. The New York Central has exercised the option attached to its rail orders in October involving 184,650 tons, bringing 12,000 tons of rails and 1200 tons of angle bars additional to the leading interest. This interest also has booked 2300 tons of rails for the Chicago & Western Indiana and 1400 tons for the Belt Railway of Chicago. A number of miscellaneous, small orders for rails and fastenings have been received by both makers here.

New car placements continue light but car builders are taking a heavy tonnage of steel against old contracts.

ORDERS PLACED

Quaker City Tank Line, 200 tank cars, to American Car & Foundry Co.

American Rolling Mill Co., three ore cars, to American Car & Foundry Co.

General Refractories Co., 20 hopper cars, to the American Car & Foundry Co.

Seaboard Air Line, 80 caboose underframes to the Richmond Car Works; cabooses will be built in railroad's own shops.

Southern Pacific, 40 Hart ballast cars, to the Rodger Ballast Car Co.

Canadian Salt Co., Ltd., five tank cars, to American Car & Foundry Co.

Victoria railways, Australia, 18 miscellaneous freight cars, to the American Car & Foundry Co.

Huron Portland Cement Co., five hopper ore cars, to the National Dump Car Co., and the American Car & Foundry Co.

Union Pacific, 400 ballast cars, to own shops.

Carnegie Steel Co., 12 70-ton gondolas, to Standard Steel Car Co.

New York Central, 29 motor submarine cars, to Standard Steel Car Co.

Chicago, Rock Island & Pacific, 1200 box and 400 gondolas, to American Car & Foundry Co.

ORDERS PENDING

Union railroad, 20 cabooses, and 12 70-ton gondolas; pending.

Baltimore & Ohio, 200 freight car underframes; pending.

Republic Iron & Steel Co., eight steel gondola bodies; bids asked.

Swift & Co., 300 refrigerator cars and 300 underframes; pending.

Northern Pacific, 10 observation cars; pending.

South African railways, 69 miscellaneous coaches; pending.

Canadian Pacific, repairs to 1200 cars; bids asked.

Sloss-Sheffield Steel & Iron Co., 200 coal cars; pending.

Wire

Large Consumption, Specifications Heavy—New Prices Not Fully Established

CONSUMPTION of wire and wire products continues heavy and specifications are liberal since they are at prices under present levels. New business is at the recent advance but is relatively light. Former contracts have been extended to include March in several instances at $1 advance, but the new prices have not been fully established. As a whole the situation is strong from the producer's point of view with outlook excellent for continued strength in all lines.

WIRE PRICES, PAGE 582

Chicago, Feb. 24.—Specifications for wire and nails continue good although slightly under the high rate of the past few weeks. Improvement is noted in demand for mine and boat spikes. Operations at most mills continue at about 85 per cent. While on new business western quotations on plain wire figure back to 2.80c, base Joliet and Waukegan, and on wire nails, to 3.05c, base, Joliet and Waukegan, most current specifications are against business at the old prices.

Boston, Feb. 24.—Wire demand is active in New England and prices are strengthening. Worcester producers are holding plain wire at 2.90c but quotations of 3.00c delivered Boston have been made recently.

New York, Feb. 24.—Some consumers who last November placed wire and nail contracts for December-February shipment have been able to extend these contracts through March at an advance of 10 cents per 100 pounds over the November prices, making March quotas 2.85c base Pittsburgh for nails and 2.60c for wire. In other instances March requirements will be bought currently. Some nail contracts have been placed for 60 days, expiring in April, at 2.95c base Pittsburgh. It is reported that some second quarter wire business has been placed at 2.70c base Pittsburgh. The volume of these specifications is good.

Pittsburgh, Feb. 24.—Backlogs in wire products still are large and mills are executing them as rapidly as possible since the specifying rate is strong. Little has been done to establish the new prices of 2.70c and 2.95c base, on plain wire and wire nails, respectively. In fact, some small producers are having difficulty getting business at 2.60c and 2.85c in the prompt market. Practically all jobbers and manufacturers are well covered at those, or still lower figures. Fencing demand is good and by some is said to be considerably ahead of last year at this time.

Nonferrous Metals

Prices a Little Stronger as London Begins to Recover and Users Are More Active in Markets Here—Products Steady

Prices of the Week

	—Copper— Electro delivered	Lake delivered	Casting refinery	Spot Tin, N. Y. Straits	New York Lead	Lead St. Louis East	St. Louis Zinc	Aluminum 98-99%	Antimony Spot	Nickel Ingot
Feb. 18	14.50	14.75	14.00	56.87½	9.25	8.90	7.50	27.00	21.00	31.00
Feb. 19	14.50	14.87½	14.12½	57.00	9.20	8.90	7.55	27.00	20.00	31.00
Feb. 20	14.75	14.87½	14.25	57.00	9.20	8.90	7.60	27.00	20.00	31.00
Feb. 23 Holiday.										
Feb. 24	14.75	14.87½	14.25	57.00	9.25	8.95	7.60	27.00	20.00	31.00

NEW YORK, Feb. 24.—Business in metals was interrupted by the holiday, practically nothing being done here from Friday afternoon to Tuesday morning. The tone of the market, however, has been stronger. Europe has been indicating that it has needs which must soon be filled and London prices have been advancing.

For the past 30 days the markets here and abroad have been moving aimlessly, however, with declines and recoveries every few days. These movements have tended to confuse consumers, so they have remained out of the market pending some signal that bottom has been reached. News of special bearing on the metal markets has been scarce, though the French political and financial difficulties have not been constructive. At the same time, many European consumers are not well stocked with material, being unable to carry much on hand, due to shortage of credits.

Copper—Electrolytic copper dropped to 14.50c, Conecticut, last week, the low price of the year, and ¾ cent below the high point of the year. At this level consumers became interested and on Thursday bought some substantial tonnage, whereupon the market quickly advanced to 14.75c, Connecticut, 14.87½c Middle West. Speculators have shown renewed interest at current prices, bidding 14.65c, refinery, for substantial tonnages. Today inquiries were active again.

Wire—Inasmuch as the wire mills are well booked for the immediate future, wire prices did not follow the recent dip in copper, though bare wire did decline ⅛ cent to 16.62½c to 16.75c, base, mill. New business in wire has been light, while operations have continued at 90 to 100 per cent. Shipments considerably exceed new bookings and unfilled orders have been gradually declining. Weatherproof and magnet wire have been quoted 18.25c to 18.50c, base, mill.

Rolled products—New business in rolled products improved somewhat last Thursday and Friday, in keeping with the stiffening in copper prices. Consumers of products are basing their buying policies to a large extent on the action of the copper market and higher copper prices usually stimulate buying of rolled goods. No change has been announced in base prices.

Zinc—The gradual advance in the London zinc market has brought London prices to close to parity with the St. Louis market and has encouraged smelters to hope for early resumption of export buying. Business has been done the past week on a range from 7.50c to 7.62½c, East St. Louis, for prompt shipment, with discounts for futures of 2½ points a month.

Lead—Lead prices have been steadier this week as a result of advances in London, which in turn have been due to better buying and to withdrawal of Burma lead offerings from the market following a fire in the Burma Corp's mine. The American Smelting & Refining Co. reduced its price $5 a ton or ¼ cent a pound, Feb. 17, to 9.25c, New York, when the open market dropped to 9.15c, New York, and 8.90c, E. St. Louis. Today the market was stronger on increased buying.

Tin—A moderate buying has been done in tin the past week, principally for professional account. Consumer's buying in London and on the Continent has been improving. Price of Straits tin in New York has ranged between 57c and 57.70c the past week. Straits shipments the first half of February were 4500 tons, a big figure.

Antimony—The stringency in spot antimony has been unabated. Holders have been able to get 20c duty paid on small lots, but futures have been marked steadily lower at 10.25c, c.i.f. in bond.

Aluminum—The aluminum situation is unchanged, with the price of 98 to 99 per cent remaining 27c and 99 per cent 28c. Premiums are being asked for small lots for immediate delivery.

Scrap—Old metals are dull and prices weak.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	19.62½
Copper, hot rolled	23.00
Zinc, ga. 9 to 18 (plates ½c less)	11.00
Lead, full sheets (cut ¼c more)	13.25 to 13.75
Aluminum, bright, 0 to 35 gage	37.50 to 92.00
SEAMLESS TUBES	
High brass	24.25
Copper	25.25
RODS	
High brass, round, ⅜ to 2½-inch	17.62½
Naval brass	20.12½
WIRE	
Copper	16.62½ to 16.75
High brass	20.12½

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
New York	9.00
Chicago	9.25
Cleveland	9.50
HEAVY YELLOW BRASS	
New York	7.50
Chicago	8.00
Cleveland	7.50
ZINC	
New York	4.00 to 4.25
Cleveland	4.25 to 4.50
HEAVY COPPER AND WIRE	
New York	12.00
Chicago	12.00
Cleveland	11.50 to 12.00
RED BRASS TURNINGS	
New York	8.50
Chicago	8.75
Cleveland	9.00
YELLOW BRASS TUBING	
Cleveland	8.00
NO. 1 BRASS ROD TURNINGS	
New York	8.25
Chicago	8.75 to 9.00
Cleveland	8.50 to 8.75
LIGHT COPPER	
New York	10.00
Chicago	10.00
Cleveland	9.75 to 10.00
LIGHT BRASS	
Chicago	7.00
Clippings, Chicago	10.00 to 10.25
ALUMINUM	
Borings, Cleveland	12.50
Old sheet, Cleveland	17.50 to 18.00
Clippings, Cleveland	21.00

Secondary Metals

Remelt aluminum No. 12	22.50 to 23.00
Brass ingot 85-5-5-5	12.25 to 12.50

Coke By-Products

Market For Distillates Active; Sulphate Demand Dull

New York, Feb. 24.—Trading in light oil distillates continues active. Some sellers are behind in their shipments of toluol and solvent naphtha. While the situation is easier in benzol, business is brisk. Solvent naphtha prices are unchanged. Benzol shows a similar situation. Commercial xylol is featureless, with prices holding at 26 cents tanks works and 31 cents in drums.

Demand for sulphate of ammonia remains dull, domestic and foreign buyers showing little interest. However, with the great bulk of production going into contracts, prices are relatively steady at $2.60 to $2.65 for material for domestic account and $2.85 to $2.90 seaboard, for material in double bags for export.

The market on naphthalene may be quoted at 5½c works for flakes in carload lots and 7½ cents for balls. Less than carload lots are going approximately ½ cent higher. Phenol is quoted at 27 cents local warehouse for spot and 25 cents for futures.

The Chateaugay Ore & Iron Co. expects to resume production of copper-free low phosphorus pig iron at its furnace at Standish, N. Y., about May 1.

Northwest Season Late

Business Ezpected To Pick Up Soon—Building Activity Continues—Road Construction Heavy

SEATTLE, Feb. 18.—Business is not up to expectations but as it is about equal to the same period a year ago it is evident the trade entered the year with too much enthusiasm. The general opinion is that the season is backward and that the buying movement will start briskly later.

While trade is slow the situation fundamentally seems to be strong and manufacturers and wholesalers are anticipating a speedy improvement. Jobbers are carrying large stocks and are prepared for an active movement.

Building construction is gaining momentum in Seattle. Last week more than 50 new residences were started and apartment house construction to the amount of $500,000 was announced. New work includes a $300,000 University Christian church and the 6-story Ambassador hotel. Building is equally active at Portland, plans for the 12-story $800,000 Bedell building having been announced this week. Bids will be asked soon.

Washington state highway commission has adopted a two year construction program which includes about $3,000,000 for new bridges, as follows: Span between Marysville and Everett, to cost $1,000,000; span over Pacific highway near Tacoma, $900,000; Vantage Ferry bridge, $500,000; Elwha bridge $100,000; Kettle Falls, $250,000. Some of this work will be done during 1925. Oregon highway commission will open bids Feb. 26 for a number of large projects including a number of bridges in which are involved 100 tons of reinforcing and 158 tons of structural steel.

Northern Pacific railway is relaying its steel tracks between Seattle and Black river. Thirteen miles of double track of main line are to be laid, 100-pound rails replacing 90 pounds. The steel is coming from Duluth.

Pig Iron and Coke

This market is unchanged from a week ago. There is practically no buying as foundries are well stocked or covered by contracts protecting their supplies for first half.

Bars, Plates and Shapes

Demand for reinforcing bars has eased off somewhat but this is regarded as only temporary as construction is resuming activity and several large projects are to be up soon. The local mill has considerable work on hand but new orders are in small tonnages. The price of merchant bars is firm at 2.55c. There is no foreign interest in bars and no inquiries are coming from consumers in the Orient.

The statement that Henray & McFee, Seattle, had been awarded the contract for the fitting out pier at Puget Sound Navy Yard is in error. This firm submitted the low bid but Washington navy officials have not yet made the award. This contract involves about 2000 tons of reinforcing steel but no structural materials.

Plates and shapes are unchanged at 2.60c. Demand for plates is limited in this territory but considerable work is coming up soon that will involve some fair sized tonnages of shapes.

Finished Materials

Wholesale jobbers report their stocks moving rather slowly. No particular item is in active demand and there is no outstanding feature to the market. Slowing up of the lumber industry, business barometer on this coast, is being reflected in other lines and steel and iron are feeling the effects. There is every indication that the season in Alaska will be unusually active and buying in that direction is better than in local centers.

Modernized Mills Closed by Wage Demand

New York, Feb. 24.—About 700 men employed in the Schuylkill Iron Works of the Alan Wood Iron & Steel Co., Conshohocken, Pa., went out on strike last week over a wage grievance. The following statement was issued by H. C. Thomas, general manager and Ledyard Heckscher, vice president and acting president of the company:

The following statement was issued:

"The scale of wages submitted to the men working on certain remodeled and modernized mills and refused by them is higher than the rates paid by any of our competitors. The men on these mills elected to quit work. This simply means that the company cannot compete with other producers of similar products, leaving the company no alternative but the closing down of the whole of this department."

Iron and Steel Payroll and Personnel Gain

Washington, Feb. 24.—Of the groups of manufacturing industries in which gains in the number of employes and in the total earnings of these employes were made in January, the iron and steel group is one of three showing increases in payroll totals and one of six groups in which gains were made in employment. A survey by the bureau of labor statistics of the department of labor shows employment in manufacturing industries of the country as a whole gained by nine-tenths of 1 per cent in January as compared with December, while the aggregate earnings of employes decreased 2.6 per cent.

These preliminary and unweighted figures of the bureau of labor are based upon reports from 8785 establishments in 52 industries. Of the 12 groups of industries, the iron and steel, leather, vehicle, miscellaneous, textile and chemical groups show gains in employment, while the iron and steel, leather and textile groups alone show increased payroll totals. The vehicle group, with a gain of 2.4 per cent in employment, reported a loss of nearly 10 per cent in payroll totals, largely due to the inventory season in automobile plants.

Twenty-five of the separate industries gained in employment in January as compared with December and 19 gained in payroll totals. The gains in employment were 4 per cent or more in iron and steel, automobiles, boots and shoes, millinery, shipbuilding and steamfittings.

Holds Sales Meeting

Branch office representatives of the Pittsburgh-Des Moines Steel Co. met in sales conference Feb. 16-20 to discuss problems confronting the fabricating industry. About 60 members of the organization from Dallas, Tex., Des Moines, Ia., Detroit, New York, Richmond, Pittsburgh and Neville Island attended and a dinner was tendered them by the company Thursday night at the Fort Pitt hotel. President W. H. Jackson and Sales Manager George A. Smith were the speakers. A feature of the gathering was the sale of a structure conducted by way of dialogue between two of the New York representatives, one as a salesman endeavoring to overcome the sales resistance offered by the other as the buyer.

One of the papers entitled "Advertising As Relating to Sales" stressed somewhat the importance of advertising in conducting a sales campaign. Other papers presented and subjects discussed included "Standardization of Structures," "Railroad Business," "Uniform Estimating," and "Frost Cases for Cold Water Pipes." The matter of drawing up specifications to conform with general practice in the industry, which still would be in line with the ideas of some of the technical societies, was gone into at length but definite action was deferred. Painting of structural steel was another matter which received considerable attention and as far as the Pittsburgh-Des Moines company is concerned, it has been decided to adopt a red lead pigment with certain other pigments and linseed oil, as recommended by the Factory Mutual Insurance Co., Boston.

Algoma More Active

Sault Ste., Marie, Ont. Feb. 24.—The Algoma Steel Corp., blew in No. 3 blast furnace Feb. 20, the largest of its group and now has two furnaces in operation. The company also has two open hearth furnaces, and the 12 and 18-inch merchant mills running. The open hearth plant will start toward the end of next week to make steel for the rail mill, which will go in on double turn March 2.

England Is Sending More Iron

Cargo of 5000 Tons Loading for Shipment to Philadelphia—Asiatic Petroleum Co. Placing Large Orders for Tin Plate—La Providence Books 5000 Tons of Rails for Algeria

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
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LONDON, Feb. 24.—A general downward tendency is noted in the British iron and steel market this week. A cargo of 5000 tons of pig iron is loading for shipment to Philadelphia. Otherwise, there is little news of international interest. Continental competition in the steel market continues keen, some of the European manufacturers underselling those in Britain. The Asiatic Petroleum Co. is placing large orders for tin plate in this country. Exports of thin sheets are good. IRON TRADE REVIEW's correspondent in Berlin reports German interests are exporting barbed wire at £15 ($71.40); nails at £14 ($66.64); cold rolled strip steel at £13 ($61.88) and annealed wire at £15 ($71.40). Palestine is an especially good buyer of German material.

The Paris correspondent reports that the Societe de la Providence, Charleroi, Belgium, has taken an order for 5000 tons of rails for Algeria, at £5 6s 6d ($25.36) delivered

Franco-German Trade Pact Imminent

BY VINCENT DELPORT

PARIS, Feb. 12.—A further stage has been reached in negotiations between French and German delegations seeking a commercial *modus vivendi*, following the expiration of the Treaty of Versailles provisions Jan. 10. Herr Trendelenburg, head of the German delegation has returned to Paris and, after having declared answers of the French minister of commerce to certain technical points which had been raised by the Germans, are perfectly clear, he still insisted on the reservations of the German government as to the final agreement. By so doing it appears acceptance by Germany of a temporary agreement would be subjected to the provisions of the final agreement, as yet unknown. Evidently the object is to force the French government to bind itself for the future respecting certain clauses, mainly the grant of the most favored nation treatment to Germany. It is not to be expected the French concessions will reach that point. The French delegation already has conceded several points in order to arrive at a better system but they will not bind themselves as to the future until the draft of the revised tariff has been sanctioned by the chamber and the senate. In this respect the French delegates are supported by public opinion.

It may be assumed the Germans are aware of this and that, not being anxious for a settlement arrived at too quickly, are endeavoring to let negotiations linger on in order not to bring about a split between the two countries but to keep a door open for a final move at the opportune moment.

There is no doubt the operation is being conducted by the leading German iron and steel producers whose influence on the government as well as on the finishing industries and consuming interests has been predominant of late. The finishing industries, especially in South Germany, could obtain iron and steel from Lorraine and the Saar district more cheaply than at home and they were in the habit of supplying themselves from these sources. Thus they were in favor of the conclusion of an agreement with France which would not bar the frontier altogether to French iron and steel, at any rate up to a certain tonnage. On the other hand, the French were expected to offer certain facilities toward the entrance of German manufactured products.

The author is European manager, in London, England, of IRON TRADE REVIEW.

The ironmasters, however, were decidedly antagonistic to making concessions to French steel. During the past three years they have considerably increased their capacity of production in the Essen district. They claim that they can easily satisfy domestic requirements of iron and steel and are not willing to incur French competition. As a result, not only are they against making tariff concessions in favor of French steel, but they seek for protection. At an earlier stage of the negotiations they suggested that a limited tonnage of Lorraine steel should be imported each year at a preferential tariff, but the transactions were conducted between Lorraine steelmakers and the German raw steel union and not with the individual users. Thus the Essen steel magnates would maintain their influence and sever the connection between Lorraine producers and their German customers. Furthermore, Germany was to receive most favored nation treatment. The French refused and offered counter propositions.

In the meantime the German steelmakers were conducting negotiations with the consuming industries and in the latter part of December, 1924, an agreement was concluded according to which manufacturers of finished products would purchase German iron and steel and would then receive a compensation in the form of an export bonus amounting to about the difference between home prices and those obtainable from foreign sources. Now the German ironmasters have the upper hand and their influence is felt in the present negotiations. They are endeavoring to secure French minimum tariffs for German finished material and machinery and they want the quota of French raw material imported into Germany to be the subject of private negotiations apart from the commercial treaty itself. At present they appear to be fairly confident, practically claiming they are mastering the situation. However, while the heavy industry may have gained the upper hand in Germany momentarily, many German interests resent the monopoly in fact which has been seized by the steel magnates, and are expressing their dissatisfaction.

French steelmakers, on the other hand, have practically reached the limit of their concessions while protests are being received from almost all the French consuming industries. However, France's position is weakened by the fact that the various interests involved have not been able to present a united front against the powerful German combine. Once more absence of co-operation is minimizing for the French the possibility of arriving at a solution more satisfactory to the nation as a whole. On the other hand, French steelmakers have not the influence on their present government which German captains of industry are exerting on the rulers of the Reich.

New York Central railroad will resume operation of the large car shops in East Buffalo, N. Y. on March 1. Since November, 1921, the shops have been operated by the Conners Car Co. and had been closed for six months prior to that date. The Central is expected to assign many cars to the Buffalo shops for reconstruction or repair after March 1.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 23	British Gross Tons U. K. Ports		French Metric Tons Channel Ports		Belgian and Luxemburg Metric Tons Channel Ports		German Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Despatch—By Cable	£ s d			Francs		Francs	£ s d	
PIG IRON								
Foundry No. 3, Silicon 2.50—3.00	$18.56	3 18 0*	$17.97	345	$17.62	350	$19.75	4 3 0
Basic	19.04	4 0 0	19.54	375	17.62	350	23.21	4 17 6
Basic-bessemer	20.83	4 7 6†	16.93	325	16.88	335	19.75	4 3 0
Hematite, Phosphorus 0.02-0.05	20.47	4 6 0	22.40	430	.....	...	23.80	5 0 0
SEMIFINISHED STEEL								
Billets	$32.13	6 15 0	$25.27	485	$25.68	510	$24.99	5 5 0
Wire rods	52.36	11 0 0	34.39	660	34.74	690	33.32	7 0 0
FINISHED STEEL								
Standard rails	$40.46	8 10 0	$26.57	510	$27.69	550	$28.56	6 0 0
Merchant bars	1.75c	8 5 0	1.27c	540	1.25c	550	1.29c	6 0 0
Structural shapes	1.70c	8 0 0	1.20c	510	1.21c	530	1.19c	5 10 0
Plates, ship, bridge and tank	1.86c	8 15 0	1.59c	675	1.53c	670	1.51c	7 0 0
Sheets, black, 24 gage	2.55c	12 0 0	2.95c	1,250	2.79c	1,225	2.70c	12 10 0
Sheets, galvanized, 24 gage, corrugated	3.61c	17 0 0	4.21c	1,785	5.24c	2,300	3.67c	17 0 0
Bands and strips	2.34c	11 0 0	1.65c	700	1.71c	750	2.05c	9 10 0
Plain wire, base	2.34c	11 0 0	2.38c	1,010	2.17c	950	2.00c	9 5 0
Galvanized wire, base	2.98c	14 0 0	2.95c	1,250	2.74c	1,200	2.37c	11 0 0
Wire nails, base	3.08c	14 10 0	2.50c	1,060	2.17c	950	3.02c	14 0 0
Tin plate, base box 108 pounds	$ 5.47	1 3 0	.....	...	.....	...	$ 6.66	1 8 0
Domestic Prices at Works or Furnace—Last Reported								Renten Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$18.80	3 19 0	$16.93	325(2)	$17.87	355	$20.24	88
Basic pig iron	19.04	4 0 0	16.93	325(1)	17.12	340	22.54	98
Furnace coke	3.98	0 16 9	7.40	142	7.30	145	5.52	24
Billets	32.13	6 15 0	23.18	445	25.68	510	29.44	128
Standard rails	1.81c	8 10 0	1.11c	470	1.25c	550	1.43c	138
Merchant bars	1.81c	8 10 0	1.23c	520	1.30c	570	1.46c	140
Shapes	1.75c	8 5 0	1.16c	490	1.24c	545	1.40c	134
Plates, ship, bridge and tank	1.97c	9 5 0	1.56c	660	1.58c	695	1.62c	155
Sheets, black, 24 gage	2.66c	12 10 0	2.95c	1,250	2.85c	1,250	3.02c	290
Sheets, galvanized 24 gage, corrugated	3.61c	17 0 0	4.12c	1,745	5.32c	2,350	5.32c	510
Plain wire	2.34c	11 0 0	2.34c	990	2.17c	950	1.93c	185
Bands and Strips	2.44c	11 10 0	1.56c	660	1.78c	780	1.83c	175

* Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 16s 0d ($3.81) f. o. b. Ferromanganese, £15 10s 0d ($73.78) f. o. b. The equivalent prices in American currency are in dollars per ton for pig iron, coke, semifinished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

German Syndicates Being Completed

BERLIN, Feb. 10.—The formation and organization of syndicates in various German iron and steel industries is gradually progressing. During December plants belonging to the raw steel syndicate produced 77,800 tons in excess of the output of the preceding month. The restriction of production for February has been fixed at 10 per cent. Members of the semifinished steel syndicate are against any competitor in the semifinished market between members of the raw steel syndicate and efforts are being made to make all the members of the raw steel syndicate also members of the semifinished steel organization. One important concern, the Gutehoffnungshutte, which had remained outside, is expected to join soon. Negotiations for the formation of a tube syndicate are progressing favorably and it is reported that a syndicate of wire products manufacturers, which would be a kind of subsidiary of the raw steel syndicate, is under formation.

Adjust Reich Mark Values

Now that the reichmark, the new German currency, appears to be firmly established on a gold basis large industrial concerns of Germany are gradually adjusting their finances to meet the new requirements as to balance sheets, etc. The capital of the Mannesmann Roehrenwerke before the war was at one time 70,000,000 marks and then increased to 192,000,000 marks following the purchase of coal mines and a steel plant. It is now proposed to bring the capital down to 115,000,000 reichmarks ($27,500,000). Following the war this concern has lost its British works, for which the German government has given no indemnity. It has further lost its interests in the Saar and in Italy. The number of workmen employed by this company in Germany in 1923 was 32,000. The Deutsch-Luxemburgische Bergwerke-Gesellschaft is reducing its capital in the proportion of 10 to 7 for the ordinary shares and it will now be 91,000,000 marks ($21,600,000), and the total value of the privilege shares will be reduced in the proportion of 20 to 1 or from 130,000,000 papermarks to 6,500,000 reichmarks ($1,550,000).

The German Babcock & Wilcox concern is reducing its capital from 20,000,000 to 8,000,000 marks ($1,900,000). This company reports that numerous orders, especially for high-pressure boilers, have been received during the first four months of the current fiscal year. The Bochumer Verein fur Bergbau und Gussstahlfabrikation proposes to reduce its capital from 80,000,000 paper marks to 56,000,000 reichmarks ($13,300,000). The reserves of the company amount to 16,260,000 marks ($3,860,000). No dividend has been declared for last year. Gelsenkirchen reduced its ordinary capital from 188,000,000 paper-marks to 131,600,000 reichmarks, ($31,250,000). The privilege share capital is reduced from 130,000,000 marks to 6,500,000 reichmarks. The reserves of the company are now 30,000,000 marks ($7,150,000). The Telus Gesellschaft of Frankfort has brought down its ordinary capital from 78,000,000 paper-marks to 2,925,000 reichmarks ($695,000). The privilege share capital of this company has been brought down from 2,000,000 to 75,000 marks ($17,800).

Protest on Krupp Contract

Recently the conference of ambassadors protested to the Argentine and German governments regarding the award of an order for torpedo boat boilers to Krupp in Germany. However, Krupp has declared that the torpedo boats were built in their works before the war and that the boilers were only for replacement. Furthermore, they claim that these boilers are not included in the list of war material which Germany is prevented from manufacturing under the provisions of the treaty of Versailles. It is reported that the Argentine government has accepted the offer of Krupp.

The Bochumer Verein fur Bergbau und Gussstahlfabrikation is completing the erection of an open-hearth plant to include four 60-ton furnaces.

Machinery

Railroad Lists Involving Over 80 Tools Feature Market—Sales in Fair Volume But For Single Tools—Crane Awards Drop

TWO good-sized railroad lists were features of the machine tool market during the past week. The Illinois Central issued specifications for 60 miscellaneous tools for its new Chicago yards and the Delaware, Lackawanna & Western called for 20 tools for East Buffalo, N. Y., and Scranton, Pa. The General Electric Co. continues to buy machines for its various plants. At the same time it placed a number of new inquiries. Buying continues fair generally, although mostly single tools are involved. Opinion is expressed that February will show a substantial increase in sales over January. Inquiries are from all lines of industry. Used tools are moving well, although sales are more or less spasmodic. Crane buying shows a drop but inquiries are active.

New York, Feb. 24.—The Delaware Lackawanna & Western railroad has issued a list of 20 machine tools, the equipment being intended chiefly for the company's East Buffalo and Scranton shops. The General Electric Co. continues active. Inquiries of the past week include eight shapers, two radial drills, one high speed lathe and one engine lathe for the company's plants at Cleveland and Pittsfield, Mass. The company has placed substantial orders within the past few days. Industrial buying generally continues light. Among scattered orders are a 300-ton hydraulic wheel press for Briggs & Turivas, Chicago; a 48-inch car wheel borer for the Missouri Pacific, a 36-inch x 12-foot planer for the Boston & Albany and a 44-inch side head boring mill each for the New York Central and the Toledo Terminal Railroad Co., all placed in the east. The Lehigh Valley has added a horizontal boring mill drilling and tapping machine, to its list. This machine is for South Easton, Pa. Included in the Lackawanna list are a 5-foot horizontal radial drill for are a 5-foot horizontal radial drill for its Kingsland, N. J., shops; a sensitive drill press for its Hampton, Pa., shops; a power press for its Kingston, Pa., shop; a sensitive drill press, forging machine, 10-foot power brake or bending machine and a gap shear for its Scranton, Pa. shops; a 54 x 54 x 12-foot planer; a 2-inch x 24-foot turret lathe, and an 84-inch standard vertical boring mill, a 54-inch horizontal boring mill; a 36-inch draw cut shaper and a 36-inch x 3-foot portable belt lathe for its locomotive shops at East Buffalo. The company also is inquiring for 16-inch x 12-foot bolt lathe, a 6-foot right line radial drill press; a 20-inch turret lathe, a 32-inch shaper, a high speed pipe cutting and threading machine and an automatic blacksmith hammer for its locomotive shops at Scranton. Overhead crane buying remains restricted, with prices easy.

Illinois Central List

AT CHICAGO

Bids to close March 2

54-inch, heavy-duty, vertical turret lathe at least 34 inches between top of table and bottom of cross rail.

36-inch vertical turret lathe.

200-ton vertical forcing press, with equipment for driving crown brass work and rod bushings.

Combination link and internal grinder.

2500-pound steam hammer; furnace for use with hammer, and blower.

500-pound, electric-driven helve hammer.

4-inch pipe threading machine, cutting and threading pipe ⅛ to 4 inches, inclusive.

16-inch x 6-foot medium pattern engine lathe, with taper attachment, 14-inch, 4 jaw, independent steel chuck.

Two 60-inch, plain,heavy-duty radial drill presses with peumatic column clamp.

Medium heavy-duty vertical drill press with capacity up to 2 inches and 30-inch table.

Nominal size 20-inch drill press with capacity up to 1¼-inch.

Small sensitive-speed vertical drill, capacity to ½-inch diameter.

24-inch stroke heavy duty crank shaper, with standard equipment.

Centering machine, for centering or miscellaneous lathe work.

24-inch x 10-foot and 18-inch x 8-foot heavy-duty engine lathe with taper attachment; 20-inch independent 4-jaw steel chuck with former, 14-inch with latter.

Two nominal size 12-inch x 6-foot engine bolt lathes.

Nominal size 12-inch x 6-foot portable engine lathe.

1⅛ and 2⅛-inch double head bolt cutter with full stand equipment. Quote on extra dies.

Nominal size 16-inch x 10-foot toolroom engine lathe with full equipment including taper attachment and 14-inch, 4-jaw independent steel chuck.

20-inch toolroom crank shaper with revolving table and suitable chuck or vise for tool work.

Toolroom universal cutter and reamer grinder not less than 32 inches between centers and having longitudinal movement of 24 inches.

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Chicago, Feb. 24.—Illinois Central railroad has come into the market for over 60 machine tools, most of them for the new Markham yards at Chicago. The complete list with closing dates is given on this page. This railroad will buy equipment later for its new shops at Paducah, Ky. The Rock Island railroad is inquiring for two 100-inch locomotive pin turning and wheel quartering machines, two locomotive driving box and rod bushing presses, one 48 x 48-inch x 14-foot heavy duty planer with two heads on the cross rail, one 18-inch and one 15-inch upright drill press, one plate bending roll and one flanging press. The Nash Motors Co., Kenosha, Wis., is inquiring for eight small tools. The Koehring Co., Milwaukee, has placed a 100-inch gear cutter. The Hubbard

(*Concluded on Page 602*)

Cleveland, Feb. 24.—Orders for tools continue to come in steadily but in small volume, seldom more than one or two machines being sold together. Inquiries also are received in satisfactory volume and are coming from all lines of industry. Generally February's business will surpass that of January. Current inquiries include three tools for the Pennsylvania railroad for its Columbus, O., and Altoona, Pa., shops, the former being for two lathes. The General Electric Co., has issued a list of 20 miscellaneous tools, mostly small presses for its Cleveland works. Used machinery remains in good demand and sales are regular although for but one or two tools.

Crane Orders Placed

Two 10-ton traveling cranes for McClintic-Marshall Co., Los Angeles, to Shaw Electric Crane Co.

Single orders included a 15-ton crane for stoneyard of Jerome Pagano, New York, to an eastern builder, contract for 200-foot runway awarded National Bridge Co.; 2-ton chain hoist and trolley for Raritan arsenal, Raritan, N. J., to Richard Wilcox Co.; 10-ton crawler electric locomotive crane for Strong Steel Foundry Co., Buffalo, to unnamed builder; 25-ton locomotive crane for city of Providence, R. I., to Brown Hoisting Machinery Co.; 30-ton locomotive crane for Sanderson & Porter, New York, to Browning Co.; 20-ton locomotive crane for M. Miscovitz, Reading, Pa., to Browning Co.; 10-ton handpower crane for General Electric Co., Schenectady, N. Y., to New Jersey Foundry & Machine Co.; 15-ton handpower gantry crane for machinery company near Easton, Pa., to New Jersey Foundry & Machine Co.; 15-ton locomotive crane for Tomkins Bros., Newark, N. J., to Ohio Locomotive Crane Co.; 20-ton used locomotive crane for Milton Point Lumber Co., Inc., Milton Point, N. Y., to Philip T. King, New York; 25-ton locomotive crane for Hammond Lumber Co., San Francisco, to Brown Hoisting Machinery Co.; 25-ton locomotive crane for Aloha Lumber Co., Aloha, Wash., to Ohio Locomotive Crane Co.; 10-ton traveling crane for Dyer Bros. Golden West Iron Works, San Francisco, to Cyclops Iron Works; 10-ton creeper locomotive crane for Bent Concrete Co., Los Angeles, to Brown Hoisting Machinery Co.; 40-ton traveling crane for Black Canyon power project, Idaho, to Milwaukee Electric Crane Co.

Crane Orders Pending

Crane orders pending include two cranes, 5 and 10-ton, for Milton Iron Co., Jackson, O., bids being taken; eight or ten cranes for the Pittsburgh Steel Products Co., Allenport, Pa., orders expected at early date; 10-ton crane for Pressed Steel Car Co., Pittsburgh, bids being taken on new and used; locomotive crane for Richardson & Co., Pittsburgh, bids being taken; 80-ton electric crane and 15-ton electric crane for Royal States railroad department of Siam, inquiry issued through C. P. Sandberg, 100 Broadway, New York; a handpower crane for Renaissance Bronze & Iron Co., New York, for new plant to be erected in Long Island City, bids asked; used caterpillar crane for Jacob Bros., Bridgeport, Conn.; contract to be placed shortly.

Pratt & Whitney Honors Employes for Service

Pratt & Whitney Co., Hartford, Conn., builder of machine tools, at its recent annual banquet honored 84 of its employes having a service record of 25 years or more. Two veterans have been in the employ of the Pratt & Whitney Co. for 57 years each, while another member of the organization has been with the company 51 years. Nine members had over 40 years service while 40 had 30 years or over as a record. Each veteran was presented with a badge of membership designating "Quarter Century Service."

C. R. Burt, general manager of the Pratt & Whitney Co. presided at the meeting, at which were: James K. Cullen of New York, president of the Niles-Bement-Pond Co. and the Pratt & Whitney Co., Edward L. Leeds, New York, general sales manager of the two companies; William Kopf, sales manager for Detroit of the two companies; William Kirk, sales manager for New York for Pratt & Whitney Co.; Charles M. Pond, small tool manager; J. Carlton Ward, Jr.; plant manager; William H. Miller, Hartford sales manager; W. L. Layland, superintendent of the machine shop and L. N. Richards, superintendent of the small tool works.

Stack Will Be Remodeled

An appropriation has been granted the American Steel & Wire Co. for modernizing the boiler and pumping equipment, making changes in power generating equipment and remodeling the No. 6 stack at Central Furnaces, Cleveland. This stack, a thin line unit built in 1911, will be rebuilt to conform to modern practice.

Plans New Seamless Mill

Construction of a seamless tube mill for the production of tubes ranging from 4¾ to 8⅝ inches has been authorized by the Youngstown Sheet & Tube Co., Youngstown, O., according to an announcement by President James A. Campbell. The mill will be built either at the East Youngstown, O., or Indiana Harbor, Ind., division of the company, no decision having yet been made in this connection. Completion of this unit will mark the entrance of this company into the seamless tube industry and will permit its competing in the market for rotary well drilling pipe. The new mill will have a theoretical output of 120,000 tons annually. Plans for 12 mills for the production of common sheets and a complete tin plate plant to include either 12 or 24 mills, have been under consideration for several months for erection at the Indiana Harbor, Ind. plant of the company. Definite action probably will be taken before many weeks. Last week contracts for a 21 and 23-inch combination sheet bar and skelp mill was let for installation at the Indiana Harbor division. A new blast furnace now under construction at the company's western holdings is expected to be completed next month.

Auto Production Shows Gain in January

Washington, Feb. 24.—The department of commerce announces American production for January of motor vehicles as 212,908 passenger cars and 28,004 trucks, of which 204,607 passenger cars and 26,464 trucks were made in the United States, and 8301 passenger cars and 1540 trucks were produced in Canada.

The table below is based on figures received from 166 manufacturers for recent months, 69 making passenger cars and 113 making trucks (16 making both passenger cars and trucks). Data for earlier months include 56 additional manufacturers now out of business, while January data for 6 small firms were not received in time for inclusion in this report. Figures on truck-production also include fire apparatus, street sweepers and busses.

Passenger Cars

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	84,189	228,860	293,822	212,908
Feb.	112,755	260,320	343,444	.....
March	157,839	327,038	357,006	.....
April	202,567	351,622	346,355	.....
May	238,462	358,646	286,266	.....
June	268,501	343,985	225,034	.....
July	228,456	303,497	244,503	.....
Aug.	252,795	318,848	255,193	.....
Sept.	190,867	302,340	263,468	.....
Oct.	219,919	338,469	260,845	.....
Nov.	217,953	288,810	204,316	.....
Dec.	210,692	279,862	182,028	.....
Total	2,384,995	3,702,297	3,262,280	.....

Trucks

	1922 Total	1923 Total	1924 Total	1925 Total
Jan.	10,005	20,506	30,627	28,004
Feb.	13,853	23,283	32,756	.....
March	20,631	36,619	36,270	.....
April	23,429	39,641	37,766	.....
May	24,880	45,677	35,112	.....
June	26,962	42,453	28,884	.....
July	22,507	31,703	26,227	.....
Aug.	25,273	32,195	28,503	.....
Sept.	19,905	29,626	31,829	.....
Oct.	22,446	31,515	32,332	.....
Nov.	22,522	29,166	27,766	.....
Dec.	20,911	28,862	27,324	.....
Total	253,324	391,246	375,426	.....

To Run Own Coal Road

Birmingham, Ala., Feb. 23.—The Sloss-Sheffield Steel & Iron Co. has leased 16 miles of trackage rights from the Louisville & Nashville railroad, and will build four miles of railroad on its own account. It has asked for bids on a locomotive and 200 cars, with the purpose of hauling its own coal and coke from the Flat Top coal fields, 20 miles from its blast furnaces and by-product ovens.

Japanese Sheet Producer Buys American Mills

The Kawasaki Dock Yard, which operates a rolling mill plant near Kobe, Japan, is carrying out plans which will result in increasing its sheet capacity to approximately 100,000 tons per year. The initial installation now in operation, was placed by Takata & Co., New York, with Mackintosh, Hemphill & Co. It has capacity for producing 30,000 to 40,000 tons per year. The second unit was ordered three weeks ago by Suzuki & Co., New York, from the National Roll & Foundry Co. It has capacity for about 20,000 tons per year. Suzuki & Co. now are negotiating for a third unit which will increase the capacity by another 40,000 tons. The Kawasaki company specializes on thin sheets, 30 gage and lighter.

Form Car Door Company

Youngstown, O., Feb. 24.—The Youngstown Steel Car Door Co., a subsidiary of Youngstown Sheet & Tube Co., because its large stockholders have control, has started operations temporarily at the Midland Steel Products Co. plant in Cleveland. The company has just booked its first order from the Chicago, Burlington & Quincy railroad for car doors. It is using plates and heavy sheets made by the Youngstown Sheet & Tube Co. in its manufacturing process. J. A. Campbell is president of the new company. Samuel Mather, J. L. Severance, H. G. Dalton and H. Coulby are among those interested in the new organization.

Refinance Atlas Steel

Stockholders of the defunct Atlas Steel Corp., are offered a chance to participate in the organization of the Atlas Alloy Steel Co. which bought the assets of the former company. The offer consists of 1000 units of $100 par value 7 per cent prior preferred stock together with 2½ shares of no par value common stock for $100 and is limited to March 16. Debt and capitalization of the new and old companies are compared as follows:

	New	Old
Bonded debt	$1,634,500	$2,000,000
Notes	635,000	4,350,000
Prior stock	300,000	500,000
Preferred stock	1,500,000	5,000,000

Buying Coal Lands

Birmingham, Ala., Feb. 23.—The Gulf States Steel Corp. is closing negotiations for 85,000 acres of coal lands in Alabama. The Bessemer Coal, Iron & Land Co., is selling the property. The property is in Tuscaloosa and Fayette counties, and the coal is deep.

Discuss Influences of Sulphur

American Institute of Mining and Metallurgical Engineers Holds Annual Meeting in New York—A Number of Authorities Present Papers —Melting Temperatures Arouse Much Interest

PROBLEMS of the iron and steel industry attracted attention at the annual meeting of the American Institute of Mining and Metallurgical Engineers at the Engineering Societies building, New York, last week. Particular interest was manifested in the discussion of the influences of sulphur on blast furnace and open hearth processes. A tabulation of assumed ideal melting temperatures of simple steels proved a matter of lively debate. Three papers concerned iron ores.

A feature of the program was the Howe memorial lecture, the second to be delivered before the institute. It was entitled "Austenite and Austenitic Steel," and was presented by Dr. John A. Mathews, vice president of the Crucible Steel Co. of America, New York. At the close of the first day's sessions, Col. Arthur M. Dwight unveiled in the foyer of the Engineering Societies building a lifesized bronze tablet of Dr. Rossiter W. Raymond. Dr. Raymond was a founder of the institute, one of its early presidents and vice presidents, and for 27 consecutive years was its secretary. Upon his retirement from this latter position in 1911, he was made secretary emeritus, in which capacity he died in 1918.

J. V. W. Reynders, New York, noted last week in IRON TRADE REVIEW as elected president, succeeds William Kelly, Iron Mountain, Mich. Mr. Reynders formerly was first vice president, and in this capacity was succeeded by E. De Golyer, 65 Broadway, New York. C. F. Rand, 71 Broadway, New York, was re-elected treasurer, and F. F. Sharpless, also of that city, secretary. Five directors were re-elected, and three members newly appointed. The latter are J. L. Agnew, Copper Cliff, Ont., Canada; R. H. Sweetser, American Rolling Mill Co., Columbus, O.; and J. M. Callow, 50 Broad street, New York. These officers will direct the society during 1925.

Sessions were held on nonferrous metals, with symposiums on coal and coke, petroleum and gas and nonmetallic materials. A smoker was held Monday evening, and the annual dinner dance, Wednesday evening. Speakers at the annual dinner included Maj. Gen. C. P. Summerall and Charles McCrea, minister of mines, Ontario, Canada. The James Douglass medal was awarded to William Hastings Bassett, of the American Brass Co., Waterbury, Conn. Thursday was given over to an excursion to the naval air station at Lakehurst, N. J. Friday many of the members visited the plant of the Nichols Copper Co., Laurel Hill, L. I.

Melting Temperatures of Interest

ASSUMED melting temperatures were discussed in a paper, "Finishing Melting Temperatures of Simple Steel Ingots," presented by Henry D. Hibbard, consulting engineer, Plainfield, N. J. The speaker endeavored to give in tabulated form, the proper temperatures for finishing and casting simple steels of different carbon contents, up to 1.5 per cent. Four temperatures for each steel were given, namely, that of the metal in the furnace just before tapping; that of the stream of steel flowing from the furnace spout into the ladle; that of the stream entering the mold at the beginning of teeming; and that of the stream at the end of teeming. Either of the first three mentioned, the speaker, declared, might with some justification be called the casting temperature.

In presenting this table, Mr. Hibbard stated that there were three things which largely determine what a batch of steel will be; namely, composition, casting temperature, and rate of teeming. These are so interrelated that each must conform to or be right for the other two. Later, in the discussion, one speaker declared there should be a fourth factor, that being the rate of cooling the steel in the mold.

The term "casting temperature," Mr. Hibbard stated, is rather indefinite as there are as previously pointed out several temperatures to which the term might be applied. For the proper consideration of casting temperatures, he thought all steels should be divided into three classes: Killed steels, which settle in freezing and contain no gas holes; partly killed steels, which contain some gas holes more or less harmful; and effervescing steels, which evolve gas freely in the molds. He discussed briefly casting temperatures in relation to these three classes. The use of a pyrometer to tell the temperature of the open hearth bath metal appeared to be of doubtful merit to Mr. Hibbard.

Bearing on this general thought, one member pointed out that the casting temperature, joined with the rate of teeming was a mixed problem, involving the elements of composition, refinement, size of ingot mold, method of pouring, and that the casting temperature chosen out of these varying elements could not be stated in terms of degrees of temperature for anything except one particular set of these conditions.

Another contributor to the discussion stated that one alloy plant has an optical pyrometer in service 24 hours a day. This and others, he said, are actively looking for means of measurement of the temperature of steel in the furnace below slag. They realize that for actual furnace control, experience and good judgment must be called upon, but find it an advantage to check up on melters judgment by determining tapping temperatures.

Blast furnace problems were discussed at a session presided over by R. H. Sweetser. T. T. Read, safety service director, bureau of mines, Washington, presented a paper, entitled "Probable Error in Blast Furnace Records and Calculations Therefrom." He stated that nearly every measuring operation involved in securing blast furnace records involves a possible error of 5 per cent or more, and quantities that are commonly measured with greater accuracy than this have to be multiplied or divided by figures involving a possible or 5 or 10 per cent, thus introducing a corresponding possible error into the quotient.

In interpeting curves or tabular summaries, the possible error, Mr. Read said, should always be kept in mind, and observed differences that do not greatly exceed the possible error of the data should only be used with caution in drawing inferences and deductions as to the blast furnace process.

Asserting that the control of sulphur belongs essentially to the blast furnace, T. L. Joseph, metallurgist, bu-

reau of mines, Minneapolis, presented a paper designed to point out the distribution of this impurity in blast furnace materials and to indicate how its presence alters the composition, quantity, and free-running or critical temperature of the slag, and the relation between these factors, fuel economy, and the cost of iron.

Sulphur balances calculated from operating data covering 35 blast furnaces indicate, the author stated, that approximately 92 per cent of the total sulphur charges enters with the coke, 7 per cent with the ore, and 1 per cent with the stone. Most of the sulphur is carried from the furnace by means of the slag, the total amount eliminated being the product of the slag volume and the percentage of sulphur it contains. Additional sulphur in the charge must be eliminated either by increasing the percentage of sulphur in the slag or the quantity of slag. From relations found between slag volume and coke consumption and sulphur in coke and slag volume, curves were prepared by the author showing the relative value of blast furnace coke as its sulphur varies from 1 per cent. Concluding his paper Mr. Joseph stated it was important to know what saving could be made by the use of low-sulphur fuel.

"Some Factors Affecting the Elimination of Sulphur in the Basic Open-Hearth Process," presented by C. H. Herty Jr., research associate, Massachusetts Institute of Technology, was an important contribution to the iron and steel sessions. Developments in the last three years in the field of absorption of gases by aqueous solutions lead the author to believe that sulphur absorption and desulphurization in the open-hearth furnace could be predicted quantitatively. To this end experiments were carried out covering the following subjects: 1. Distribution ratio of sulphur between gas and slag (a) iron oxide formed on melting, (b) slags containing lime; 2. Rates of absorption of sulphur by slags from gases high in sulphur, and rates of desulphurization of slags by gases free from sulphur.

Among conclusions drawn by the speaker from his tests are that direct ratio exists between the concentration of sulphur dioxide over the bath and the amount of sulphur picked up by the scrap during melting, and that a direct ratio exists between the concentration of sulphur dioxide over the bath and the concentration of sulphur in a slag containing lime, when sufficient time has been allowed for equilibrium to be established.

Mr. Herty stated that it was found that the ratio between the gas and the oxide formed on melting is about 0.90 that the ratio between the gas and the slags containing lime is 0.270.

Other conclusions are that the rates of sulphur absorption and of desulphurization are equal and have a numerical value of about 0.004 pound of sulphur absorbed or lost per minute per square foot of slag gas surface per unit concentration (per cent) difference between the sulphur in the slag and the sulphur that would be in equilibrium with the gas over the slag; the use of a gas free from sulphur will allow a much higher percentage of sulphur in the charge of an open-hearth furnace; and that the use of a gas free from sulphur will prevent the loss of time due to high-sulphur heats encountered in present operation.

Discussion of this paper linked up closely Mr. Joseph's address dealing with sulphur in the blast furnace, presented at an earlier session. The question was raised by Mr. Sweetser if too much responsibility for the elimination of sulphur was not placed upon the blast furnace operator. It was shown that the open hearth operator could not handle this problem in a practical way nearly as well.

Will Use More Manganiferous Ore

AN INTERESTING paper, "Brief History of Metallurgical Practice in Cannon-making with particular Reference to the Cast Iron Gun," was prepared by Job Goostray, retired foundry superintendent, R. F. Harrington, metallurgist, and M. A. Hosmer, chemist, all of the Hunt-Spiller Mfg. Corp., South Boston, Mass. The authors divided the history into three epochs, the first beginning in 1313, the second in 1520 and the third in 1854, this latter being marked by far the greatest progress. The supplanting of the cast iron ball by the elongated projectiles of steel and cast iron and the era of rifled guns date practically from the beginning of this epoch, it was asserted. Discussion brought forth the opinion of one government engineer that the tendency at present toward building up guns by single pieces of steel, bids fair to supplant the present system of building up by hoops.

H. A. Schwartz and Mrs. N. Hird, manager of research and research chemist, respectively, of the National Malleable & Steel Castings Co., Cleveland, presented a paper entitled, "Chemical Equilibria During Solidification and Cooling of White Cast Iron." Its major conclusion was that during solidification, equilibrium is attained when the silicon is all rejected to the liquid phase, permitting silicon-free austenite to separate.

That manganese sulphide, even in the presence of an excess of manganese, will be converted to iron sulphide and enter the metal, the reaction therefore being reversible, was indicated by a series of tests conducted by C. H. Herty Jr. and O. S. True, both associated with the Massachusetts Institute of Technology. Their paper entitled "The Reaction between Manganese and Iron Sulphide," described these tests. It was further shown that the greater the excess of manganese the lower the sulphur in the metal, regardless of whether the sulphur was originally present as MnS or as FeS.

Cuyuna Range Important

Manganiferous iron ores of the Cuyuna district, Minnesota, were the subject of two interesting papers submitted, respectively, by C. P. McCormack, mining engineer, Crowell & Murray, Cleveland, and Carl Zapffe, geologist, Northern Pacific railway, Brainerd, Minn. Mr. Zapffe stated that within the past 10 years these ores have become important in the iron industry. During the war the low phosphorus black ores were in demand. At present, he stated, the high phosphorus low-silica brown ores are favored. While never a rival from the standpoint of tonnage, the Cuyuna district, the speaker declared, is destined to become, in a relative sense, as important to the industry for its manganiferous iron ores as the Mesabi district has become noteworthy for its preponderance of open-pit low-phosphorus iron ores.

Heihachi Kamura, metallurgist, Meiji Mining Co., Tobata-Shie, Fukuokaken, Japan, presented a paper, entitled "Reduction of Iron Ores by Carbon Monoxide," in which he expressed the opinion that the process of production of steel may be replaced by low-temperature reduction of iron ores some time in the future.

At one of the metals meetings, the determination of structural composition of alloys by a metallographic planimeter was discussed in a paper by E. P. Polushkin, instructor in metallurgy, Columbia university. A paper entitled "Recrystallization of Grain Growth in Soft Metals" was prepared by Maurice Cook and Ulick R. Evans, Cambridge, England, and presented at this session. "Malleability of Nickel" was the title of a paper by Paul D. Merica, director of research, International Nickel Co., New York, and

R. G. Waltenberg, research metallurgist, the International Nickel Co., Bayonne.

R. J. Anderson, consulting metallurgical engineer, Boston, and John T. Norton, research associate, Massachusetts Institute of Technology, Cambridge, Mass., submitted a paper entitled "X-ray Evidence Versus the Amorphous Metal Hypothesis."

Two new aluminum alloys of the "strong alloy" class having improved fabricating qualities were described by R. S. Archer and Zay Jefferies, of the metallurgical staff of the Aluminum Co. of America, in a paper, "New Developments in High Strength Aluminum Alloys." Development of these alloys is a result of several years research on the part of the Aluminum company in an effort to obtain a metal of the same general properties of duralumin developed in Germany 15 years or so ago, but lacking its handicaps in fabrication.

Other papers presented at this session included "Etching Aluminum and its Alloys for Macroscopic and Microscopic Examination," by Fulton B. Flick, of the metallurgical staff of the Aluminum Co. of America, and "Eutectic Patterns in Metallic Alloys," by C. H. Green, assistant in metallurgy, University of Minnesota, Minneapolis. "Scratch and Brinell Hardness of Several Cold-rolled Metals" was the subject of a paper prepared by M. F. Fogler and E. J. Quinn, both of the development laboratories of the Hawthorne works, Western Electric Co.

Foundrymen and Ceramists Get Together on Refractories Problems

RECOGNITION of the pressing character of foundry refractory requirements by the American Ceramic Society led to a special symposium held Wednesday, Feb. 18 during the annual convention of the society at Columbus. This session was attended by about 50 foundrymen, the American Foundrymen's association committee on refractories, in addition to manufacturers.

The case for the user of cupola refractories was presented by Dr. Richard Moldenke, Watchung, N. J., and James T. MacKenzie, American Cast Iron Pipe Co., Birmingham, Ala. George A. Bole, United States bureau of standards, Columbus, who presided at this session introduced the discussion by remarking on the mutual ignorance of foundrymen and refractory producers alike as to what constitutes good practice. Manufacturers deplore the tendency of foundries to buy only one class of refractory and attempt to use it for all service. The case of $45 cupola blocks used for ladle linings where a $28 product would give better service was mentioned. Further, one type of block commonly is used both for the cupola area above the melting zone where resistance to shock and abrasion is paramount and also for lining the furnace at and below the melting zone where slag action and high temperatures require an entirely different product.

H. A. Schwartz, National Malleable & Steel Casting Co., Cleveland, in a brief summary of the malleable industry's need, mentioned the difficulties encountered in air furnace practice. He stated that the ceramists' efforts should be applied to improving resistance of side wall brick to mechanical action of slags and of bung brick to mechanical destruction by heat stresses on stresses arising from the bung frame.

In the discussion following Mr. Schwartz' paper one large manufacturer operating many air furnaces recommended a 21-inch side wall constructed of fine ground, soft burned refractory blocks. A large bung block was recommended, since the reduction of joints tends to minimize trouble due to spalling.

Open-hearth furnace requirements were outlined by Professor Dana T. Demorest, Ohio State university, Columbus, who cited a foundry open hearth furnace in Columbus which is operated continuously for a year without a roof replacement. This long life is ascribed to the use of machine made brick closely and accurately laid with exceedingly thin joints. Mr. Demorest recommended grinding brick together in laying them, particularly about the outlet ports. He stated further, that dolomite makes a more satisfactory basic bottom as it resists the penetration of iron oxide. He recommended the use of chrome ore along the side walls and ports to increase the life.

The technical sessions of the society were grouped under the headings of art, enamel, glass and refractories. At the annual banquet held Tuesday, Feb. 17, it was announced that Dr. E. Ward Tillotson, Mellon institute, Pittsburgh, was elected president and Frederick Rhead, American Encaustic Tiling Co., Zanesville, O., vice president. Ross C. Purdy, Columbus, is secretary of the association. The next annual meeting will be held in Atlanta, Ga.

Abandons Puddling Plant

Work of dismantling the puddling plant and muck bar mill of the Empire Rolling Mill Co., Cleveland practically is completed. One puddling furnace and the building are the only remains of this unit which was built 25 years ago. Originally it included four single puddling furnaces, six single busheling furnaces, a rotary squeezer, a 10-inch belgian and a 16-inch bar mill. Under full operation the plant had a producing capacity of 25,000 tons of muck and scrap bars and 40,000 tons of merchant bars. , The original installation also included six sheet and four cold mills. These units are housed in a separate building and will continue to produce black and blue annealed sheets.

Employe Representation Analyzed at Length

New York, Feb. 24.—The success of employes' representation in industry, through which approximately 800 companies now are attempting to solve their labor problems, depends largely on the ability of employers to understand the point of view of wage earners, to secure their co-operation, and to develop leadership among them. This is indicated in a 500-page report issued today by the department of industrial studies of the Russell Sage foundation. While the report is based on a five-year study of employes' representation in the coal mines of the Colorado Fuel & Iron Co., undertaken by the foundation in 1919 and completed last summer, it is pointed out that the analysis of the relations between employer and employe in this industry is true also of the railroads, the packing industry, the textile industry, and other important branches of American business.

"It is very important for the owner of an industry to find out how his workmen feel about such a plan and not to rely solely upon statements about the employes' attitude from managing officials.' The report states "The success of any plan of employes' representation in industry depends on the confidence and co-operation of the employes, and on the willingness and ability of local officials to carry out the ideas of the owners. To ignore this and to permit a plan to go on for years without stimulating genuine leadership among the wage-earners is to build on an illusion."

Effect of Mergers

On Prices Gist of Testimony in Bethlehem Hearing

Philadelphia, Feb. 24.—Several witnesses in the last few days have testified as to purchases of raw steel from producers before and after the acquisition by the Bethlehem Steel Corp. of the Lackawanna steel plant and other properties. Their testimony was given in proceedings of the federal trade commission against the Bethlehem mergers.

Examiner George McCorkle, before whom the case is being heard, sustained objections by counsel for the Bethlehem company to questions asked by Attorney B. B. Bane, of trade commission counsel, in the examination of Charles C. Davis, president of the Pennsylvania Forge Co., Philadelphia, manufacturer of open die forgings. These questions related to whether the witness could state why steel purchased by his company failed to drop in the latter part of 1923, and whether the market situation existing at that time was the result of mergers of steel properties. Mr. Davis did state, however, in answer to a question, that in his experience prices changed from a fluctuating character prior to the formation of the United States Steel Corp. to a more stabilized trend after the Steel corporation was organized.

The commission's counsel sought to prove by Mr. Davis' testimony that the failure of some steel prices to respond to the falling demand at the end of 1923 was due to the fact that the market as a result of these acquisitions by the Bethlehem company "was in the hands of strong and large operators." Examiner McCorkle ruled that no conclusions of this sort should be drawn.

Harry L. McClure, purchasing agent, Lancaster Steel Products Corp., Lancaster, Pa., producer of cold-rolled and cold-drawn steel, testified that his company, owned by the General Motors Corp., and which turns over a large part of its output to the latter corporation, has bought most of its alloy steel bars since the Bethlehem mergers from the United Alloy Steel Corp., Canton, O., the Central Steel Co., Massillon, O., and the Penn Seaboard Steel Corp. He said the distribution since the mergers has been changed, the United Alloy company taking about 50 per cent; Central Steel about 25 per cent; and Penn Seaboard about 10 per cent.

Both before and since the mergers, the witness stated, his company had bought about 75 per cent or more of this material from the United Alloy and Central Steel. In answer to questions, Miss Gertrude L. Campbell, purchasing agent for the D. Wilcox Mfg. Co., Mechanicsville, Pa., which makes chiefly drop forgings for the Ford Motor Co., testified that the Ford company had informed her company that eventually the Ford interest will do all its own manufacturing and eliminate outside sources of supply. She replied that she could not assign a reason for changes adopted in purchasing material following the mergers.

Jesse L. V. Smith, president and manager of the Potts Mfg. Co., Mechanicsburg, Pa., manufacturer of ornamental iron work, light structural steel and other materials, testified as to where detailed purchases of steel were made by the Potts company, before and after the Bethlehem acquisitions.

Walter W. Posey, president and general manager of the Lancaster Iron Works, Lancaster, Pa., plate fabricator, stated his belief that consolidations in the steel industry are followed by greater stability and uniformity in prices. William De Cou Jr., vice president, Richard De Cou Co., Philadelphia, warehousing and fabricating concern, also gave testimony.

Machinery Markets

(*Concluded from Page* 597)

Steel Foundry Co., East Chicago, Ind., has placed a used 100-inch boring mill. A list from the Burlington railroad is expected. Machine tool business is spotty.

Pittsburgh, Feb. 24.—Improvement in new and used machinery is reported. Inquiries are more numerous. The latest list for six items comes from the Carnegie Steel Co. for Duquesne works and includes two or three lathes, boring mill, shaper, etc. The Westinghouse Electric & Mfg. Co., has bought several items for Sharon, Pa., and has added four or five machines to its list, including hand shears, punches and shears, and a boring mill. Its recent purchase includes presses, disk grinders and two or three other machines. The Pennsylvania railroad has asked for a lathe for Columbus, O., a bolt-threading machine for Altoona, Pa., and has purchased a grinding machine for a Maryland shop. Other sales include a large motor-driven alligator shear to an Ohio user. One inquiry calls for five or six motor-driven grinders. A feature of the used machinery market is the ordering of complete equipment for a small structural shape plant, about six items, including bending machines, etc.

Cincinnati, Feb. 24.—Inquiries were more numerous last week, but sales were small and involved mostly single units. The Cincinnati Planer Co. booked three planers, one for shipment to South America, one for a manufacturer in the Pittsburgh district and another for a Milwaukee interest. Boring mills activity is growing, inquiries on hand involving from three to four machines each. The list of the Illinois Central railroad is attracting attention of local tool builders. Used equipment is in only fair demand.

Boston, Feb. 24.—Tool sales and inquiries have shown improvement during the week. The General Electric Co. bought several machines for its Lynn, Mass., works. A Cambridge, Mass., manufacturer bought several presses and a lathe. A Springfield, Mass., manufacturer and a Providence, R. I., manufacturer each bought groups of five or six tools. A Worcester, Mass. manufacturer has received several attractive export orders during the week and reports domestic business improved. Used tools inquiries are improved. Dealers report three or four crane inquiries but no sales.

San Francisco, Feb. 16.—Movement of new and used equipment since the first of the year has been exceptionally light and the few sales made called for single installations only. Inquiries recently, however, have brought optimism. No outstanding sales are noted. Crane orders since the first of the year have also been light, only seven installations having been reported.

Illinois Central List

(*Concluded from Page* 597)

Double head twist drill grinder with capacity for twist drills up to 2½ inches in diameter.
Nominal size, 14 x 2 x 1¼-inch double floor grinder with guards and wheels.
Two medium size handpower arbor presses for general tool and repair work.
60-inch heavy-duty radial drill for general boiler shop drilling.
Horizontal staybolt threading machine suitable for turning and threading crown staybolts and threading miscellaneous radial stays.
Small vertical drilling machine with equipment suitable for telltale hole drilling in staybolts and having capacity for miscellaneous drilling up to ½-inch.
Nominal size 84-inch face grinder for grinding locomotive guide bars and miscellaneous work with full equipment including set of suitable guide bar holding fixtures.
Nominal size 36-inch x 18-foot heavy-duty engine lathe with standard equipment, including taper attachment and 28-inch independent 4-jaw steel chuck.
Nominal size vertical drill press with capacity to 1¼-inch.

Bids to Close Feb. 27

Nominal size 36-inch special vertical lathe with self-centering chuck.
Nominal size 18-inch turret brass lathe.
Six portable electric rivet heaters, 3-unit type.
No. 5 milling machine.
Complete size 96-inch, 600-ton inclined driving wheel press with all standard equipment including U-shaped and filler blocks used in application or demounting of axles and crank pins.
Three portable electric direct-current arc welding machines. Quote on 200 and 300-ampere outfits.
Nominal size 2¼ x 24-inch turret lathe.
Nominal size 3 x 36-inch turret lathe, to be equipped, like above, for bar stock work on studs, bolts, etc.

New England Shops Put on More Men

Boston, Feb. 24.—Machine shop work in New England has shown a steady increase during the past three months, according to the Massachusetts department of labor and industries. In 37 typical machine shops the number of employes increased from 5746 in December to 5855 in January, and 80 per cent of the plants reporting were operating on full time. Machine tool manufacturers also report an increase in the number of employes in January as compared with December.

The cutlery and small tool business, with a reported 1 per cent increase in

number of employes in January against December, has shown a marked increase in the number of plants placed on full time basis. At present about 85 per cent are operating full time. Foundries in the district showed a slight decline in number of wage earners employed, with about 60 per cent of the plants on full time. Increases in number of workers employed are shown in the textile machinery industry and electrical machinery.

Executives Are Chosen at Annual Meeting

Lewis Buckley Stillwell was elected chairman of the Engineering Foundation at its tenth annual meeting recently to succeed Charles F. Rand, who declined re-election after serving five years. Mr. Stillwell, a nationally known engineer located in New York, is past president of the American Institute of Electrical Engineers and the American Institute of Consulting Engineers. He is a member of several other societies, both here and in Great Britain. Mr. Stillwell was active in the construction of the Niagara Falls Power Co.'s first plant and was electrical director of the company from 1897 to 1900. He has been interested in the electrification of the Manhattan Elevated railway and rapid transit systems in New York.

Edward D. Adams was re-elected first vice chairman and Elmer A. Sperry was chosen second vice chairman. Other officers elected were: Treasurer, J. S. Langthorn; assistant treasurer, Harry A. Lardner; director and secretary, Alfred D. Flinn. To the board the following were elected as trustees of the United Engineering society: G. H. Pegram, American Society of Civil Engineers; J. V. Davies, American Institue of Mining and Metallurgical Engineers; W. F. M. Goss, American Society of Mechanical Engineers; Bancroft Cherardi, American Institute of Electrical Engineers. Eight members nominated by the governing bodies of the founder societies were chosen as follows: E. D. Adams, Robert Ridgway, A. L. Walker, H. M. Boylston, A. M. Greene Jr., G. A. Orrok, Gano Dunn and L. B. Stillwell. E. A. Speery, C. F. Rand and A. D. Little were named members at large. W. L. Saunders, chairman of the naval consulting board with an exofficio member as president of the United Engineering society.

The four member societies of the foundation have begun the study of plans to increase the endowment of the organization, established by Ambrose Swasey with a gift of $500,000 and recently supplemented by a bequest of $50,000 under the will of Henry R. Towne.

News of Societies

ANNOUNCEMENT is made that the twentieth annual convention of the National Supply and Machinery Distributors' association will be held in Atlantic City, N. J., April 27-29. Meetings will be held at the Ambassador hotel, which has been selected as the headquarters.

* * *

Will Publish a Survey

At a recent meeting of the board of governors of the southern division of the American Mining congress at Birmingham it was decided to cooperate in the publication of the survey made of the natural resources and products of the South, as proposed by the national organization of the congress. Dr. Mayce Payne, New York, has made the survey which is most comprehensive.

* * *

Addresses Joint Meeting

Frank D. Chase, consulting engineer, Chicago, on Feb. 18 presented an illustrated address, "Layout and Design of the Small Modern Foundry," before a joint meeting of the Newark Foundrymen's association and the American Society of Mechanical Engineers. The meeting was planned to give engineers a better understanding of foundry problems and to show foundrymen the advantages of solving problems by engineering methods.

* * *

Announces Meeting Date

The Southern Metal Trades association will hold a two-day convention at San Antonio, Tex., April 28 and 29. The St. Anthony hotel has been selected as the convention headquarters.

* * *

Will Meet in Portland

The Pacific Coast has arranged for a regional meeting of the American Society of Mechanical Engineers, the meeting to be held at Portland, Ore., June 22-25. An attendance of 500 is expected. Two sessions during the four-day program will be devoted to utilization of wood waste.

Convention Calendar

Feb. 24-27—American Concrete institute. Annual meeting at Chicago. Harvey Whipple 1807 Grand boulevard, Detroit, is secretary.

Feb. 27-28—Association Executives conference. Meeting at Hotel Traymore, Atlantic City, N. J. Communications should be addressed to W. L. Chandler, secretary National Association of Purchasing Agents, Woolworth building, New York.

April 22-23—National Metal Trades association. Annual meeting at Hotel Cleveland, Cleveland. J. E. Nyhan, Peoples Gas building, Chicago, is secretary.

April 23-25—American Electrochemical society. Spring meeting at Niagara Falls, N. Y. Dr. Colin G. Fink, Columbia university, New York, is secretary.

May 5-7—Southern Supply and Machinery Dealers' association and American Supply and Machinery Manufacturers' association. Joint meeting at Atlanta-Biltmore hotel, Atlanta, Ga. F. D. Mitchell, 1819 Broadway, New York, is secretary-treasurer.

May 6-8—Society of Industrial Engineers. Annual meeting at Hotel Winton, Cleveland. George C. Dent, 608 South Dearborn street, Chicago, is executive secretary.

May 7-8—Iron and Steel Institute. Spring meeting at Institute of Civil Engineers, London.

May 18-21—American Society of Mechanical Engineers. Spring meeting at Milwaukee. Calvin W. Rice, 29 West Thirty-ninth street, New York, is secretary.

May 25-28—National Association of Purchasing Agents. Spring meeting at Milwaukee. W. L. Chandler, Woolworth building, New York, is secretary.

April 27-29—National Supply & Machinery Distributors' association. Twentieth annual meeting at Ambassador hotel, Atlantic City, N. J. George R. Fernley, 505 Arch street, Philadelphia, is secretary.

April 28-29—Southern Metal Trades association. Annual meeting at St. Anthony hotel, San Antonio, Tex. W. E. Dunn Jr., Healey building, Atlanta, Ga., is secretary.

May 6-9—American Gear Manufacturers' association. Ninth annual meeting at William Penn hotel, Pittsburgh. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

Declares Stock Dividend

The annual report of the Gulf States Steel Co., Birmingham, Ala., for 1924 shows gross profit of $1,493,972, against $2,169,863 in 1923. After reserves for depreciation, taxes and other deductions, the company reported net of $979,315 for 1924, against $1,576,521. After all dividends there was a surplus of $278,530, making the profit and loss surplus $4,138,635, against $3,926,547 in 1923.

C. A. Moffett, President, in his statement to stockholders said: "The company's operations were satisfactory and although the general depression in the steel and kindred businesses affected both the tonnage produced and prices received the company continued to hold the business in territories previously gained."

The directors declared a stock dividend on common stock of 11½ per cent.

Enameling Net Down

The National Enameling & Stamping Co., St. Louis, in its annual report for the year ended Dec. 31, 1924, shows an operating profit of $1,862,646, after all expenses and reserves for taxes. This compares with $2,356,534 for 1923. After allowing for all fixed charges the company reported a balance of $873,982 available for the capital stock.

Current Statistics of Industry

January Shape Bookings Show Large Drop

Washington, Feb. 24.—Bookings of structural shapes in January aggregated a computed total of 165,300 tons as compared with 232,000 tons in December, according to reports from 167 companies with 247,535 tons capacity in January to the department of commerce. Bookings were at 57 per cent of capacity as compared with 80 per cent in December and 70 per cent in January 1924. The following statistics list reports from 190 identical companies, reduced by consolidation from 192, including data in earlier months for 12 now out of business, with a present capacity of 252,440 tons per month. For comparative purposes the percentage figures are used to obtain a computed total for the United States, based on a capacity of 290,000 tons per month in 1924 and 1925.

	Actual bookings tons	Per cent of capacity	Estimated total bookings	Computed shipments tons
Total for 1923	1,912,935	65	.....	.....
1924				
Jan.	176,531	70	203,000	182,700
Feb.	180,397	72	208,800	171,100
March	174,254	69	200,100	188,500
April	160,389	64	185,600	205,900
May	146,036	58	168,200	203,000
June	162,010	64	185,600	217,500
July	170,868	68	197,200	226,200
Aug.	147,439	58	168,200	203,000
Sept.	165,913	66	191,400	211,700
Oct.	161,454*	64	185,600	220,400
Nov.	207,047†	82	237,800	185,600
Dec.	198,778‡	80	232,000	182,700
1925				
Jan.	141,719§	57	165,300	174,000

*Reported by 187 companies with a capacity of 251,030 tons.
†Reported by 187 companies with a capacity of 251,090 tons.
‡Reported by 183 companies with a capacity of 247,340 tons.
§Reported by 167 companies with a capacity of 247,535 tons.

Stoker Sales Drop

Washington, Feb. 24.—January sales of mechanical stokers totaled 57, a drop of 34 from the 91-total in December, according to reports received by the department of commerce from 13 manufacturers. The January total was the smallest since November 1920, when 50 were booked. Of the January number, 4 were for fire tube and 53 for water tube boilers.

	Stokers sold	Fire tube boilers	Water tube boilers
1923 Total	1464	177	1287
January	91	7	84
February	110	11	99
March	89	12	77
April	89	15	74
May	64	3	61
June	102	19	83
July	115	14	101
August	94	17	77
September	73	27	46
October	104	7	97
November	106	11	95
December	91	18	73
1924 Total	1128	161	967
January	57	4	53

Steel Castings Output Slips in January

Washington, Feb. 24.—Production of steel castings in January, totaling 82,922 tons, slipped off from the December level of 96,164 tons, but with the exception of that month was the largest monthly figure since March 1924, according to reports to the department of commerce from principal manufacturers representing over two-thirds of the commercial castings capacity of the United States. The following statistics show bookings by 68 identical companies with 100,400 tons monthly capacity in 1924, of which 43,000 tons usually is devoted to railway specialties and 57,400 tons in miscellaneous castings.

	Total net tons	Per cent capacity	Railway specialties net tons	Miscellaneous net tons
1922 totals	812,741	69.6	404,682	408,059
1923 totals	894,780	74.6	386,939	507,841
1923 mo. av.	74,565	74.05	32,245	42,320
1924 totals	772,840	64.1	388,357	384,483
1924 mo. av.	64,403	64.1	32,363	32,040
1924				
January	51,406	51.2	19,572	31,834
February	73,138	72.8	35,474	37,664
March	100,514	100.1	59,778	40,736
April	68,119	67.8	33,151	34,968
May	56,801	56.6	28,064	28,737
June	48,718	48.5	26,170	22,548
July	38,191	38.0	16,244	21,947
August	36,363	36.2	14,532	21,831
September	62,509	62.3	29,567	32,942
October	66,697	66.4	31,130	35,567
November	74,220	73.9	41,343	32,877
December	96,164	95.8	53,332	42,832
1925				
January	82,922	82.6	40,799	42,123

December Records Gain in Malleable Castings

Washington, Feb. 24.—December production of malleable castings totaling 58,773 tons was the largest monthly output since March when 72,807 tons was made, according to reports from the department of commerce. Operations were at 50.9 per cent of capacity in December. Following is a summary of the operations in 1924:

	Total tons produced	Per cent of capacity	Total tons booked	Monthly capacity
1924				
July	31,159**	28.4	30,200	109,855
August	36,727**	32.6	34,627	112,496
September	41,507**	36.9	48,729	112,349
October	50,066***	43.8	54,589	114,264
November	47,987**	42.5	48,866	113,011
December	58,773****	50.9	46,541	115,474

**Includes 4 plants reported idle.
***Includes 5 plants reported idle.
****Includes 6 plants reported idle.

Steel Plate Bookings Decrease in 1924

Washington, Feb. 24.—Bookings of fabricated steel plates in 1924, totaled 433,402 tons as compared with 775,388 tons in 1923 according to the department of commerce as reported in a preliminary statement in IRON TRADE REVIEW, Feb. 19 issue. Monthly compilations of plate fabrication are inaugurated by the department in the report just issued. Figures are based on reports received by the department from 30 identical companies including one now out of business. Bookings in 1924 were at 50 per cent of capacity while those in 1923 were around 90 per cent. Following is a summary of the detailed report of bookings.

	Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks and miscellaneous
1923—					
Total	532,805	297,788	43,876	8,243	137,742
1924—					
Total	304,187	123,445	42,237	9,398	104,862
Jan.	19,675	4,012	7,934	632	6,269
Feb.	15,498	2,393	4,700	505	6,871
Mar.	21,057	4,757	3,917	334	10,034
Apr.	19,099	6,342	1,630	710	9,052
May	24,872	5,137	6,448	693	10,936
June	28,511	15,816	2,606	640	8,518
July	21,248	11,360	657	461	7,827
Aug.	29,351	15,927	706	363	11,002
Sept.	19,430	10,286	1,128	520	6,585
Oct.	23,113	7,868	1,536	1,929	9,898
Nov.	36,937	13,098	5,206	103	9,302
Dec.	45,396	26,449	5,769	2,508	8,568

Locomotive Exports Up

Washington, Feb. 24.—Shipment of 167 mining and industrial electric locomotives valued at $901,342 for the quarter ended Dec. 31, 1924, as compared with 148 shipped in the quarter ended Dec. 30, 1924, was announced by the department of commerce, as reported by 9 builders, comprising practically the entire industry. Shipments for 1924 were 655 as compared with 1334 in 1923. Following is a comparison of statistics for 1923 and 1924.

	Quarter ending Sept. 30	Quarter ending Dec. 31	Calendar year 1924	Calendar year 1923
Number of locomotives shipped:				
Grand total	148	167	655	1,334
Mining locomotives:				
Trolley type	99	118	427	1,024
Storage-battery type	41	36	141	249
Total	140	154	568	1,273
Industrial locomotives:				
Trolley type	2	9	39	10
Storage-battery type	6	4	48	51
Total	8	13	87	61

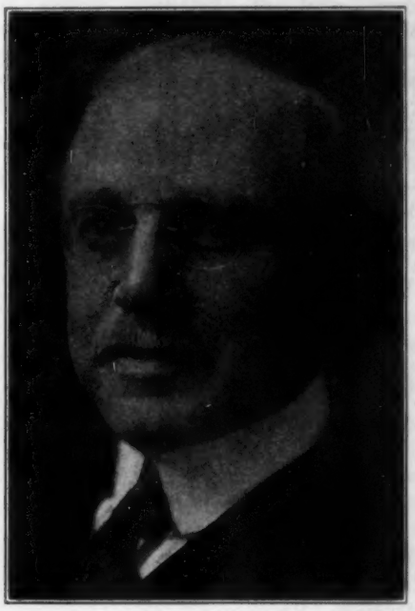
Industrial Men in the Day's News

John V. W. Reynders, Installed as Head of Metallurgical Engineers

BUILDER of bridges throughout the world he caps his accomplishments with construction of the Bear Mountain Hudson River bridge.

AS STEELMAKER and consulting engineer his varied interests bespeak a keen executive ability.

HIS hobby is municipal government, having originated the "Harrisburg Plan" of civic improvement.



BUILDER of bridges, the spans erected by John Van Wicheren Reynders, just installed as president of the American Institute of Mining and Metallurgical Engineers, span the world. From India to Canada, are to be found enduring monuments to his engineering skill. Prominent as an executive in the iron and steel industry, his widest fame as an engineer has been associated with his accomplishments in bridge construction. Some of the longest and largest bridges in the world have been erected under his supervision. Among the most notable of these are the railroad arch across the Niagara river from United States to Canada and the Gokteik viaduct at Burma, India. The latter structure is 2000 feet long and 320 feet high. American bridges whose construction he directed are the Queensboro and Williamsburg bridges, New York; Memphis bridge over the Mississippi river, and the Bear Mountain Hudson river bridge and approach highways. The last named, with exception of the Delaware river bridge at Philadelphia, now under construction, was the largest single span in the United States being 1632 feet in length.

Municipal government may be designated the hobby of Mr. Reynders, who was the originator of the "Harrisburg Plan" of civic improvement in 1901. This plan resulted in park systems, water filtration, sewage systems, and paving programs being adopted. For ten years, from 1906 to 1916, he was president of the town council of Steelton, Pa., where he completed many public improvements. He ever was building for better municipal government, not so much as a civic reformer in the presentday sense of the word but as sponsor and builder of improvements. He was a member of the National Municipal League. He has taken a part also in national politics, being a delegate to the Republican national convention in 1908. His main interests however, have been in municipal government.

Mr. Reynders was born in Hoboken, N. J., Dec. 17, 1866. He was graduated from Renssalaer Polytechnic institute in 1886, immediately afterward becoming affiliated with the steel industry at Pittsburgh. From 1892 to 1906 he was mining head of the former Pennsylvania Steel Co., Philadelphia, and it was while with that organization that he gained prominance as a builder of bridges. He rebuilt the steelmaking facilities of the Pennsylvania Steel Co., and from 1906 to 1916 served as vice president. He was receiver for the Central Iron & Steel Co., Harrisburg, Pa., from 1912 to 1917, and was president of the American Tube & Stamping Co. from 1917 to 1919. Mr. Reynders now is a director and member of the executive committee of the latter company. He is professional advisor to many steel works and banking interests, and maintains offices at 120 Broadway, New York, as a consulting engineer.

Mr. Reynders is a member of the American Society of Civil Engineers, a past president of the Engineers' Society of Pennsylvania; the American Society of Testing Materials, and the American Institute of Mining and Metallurgical Engineers. He has been a member of the last institute since 1912 and has been a director since 1919 and vice president from 1922 to 1924. He was for two years a member of the finance committee and for three years past has been a member of the executive committee. He is a trustee of the United Engineering Society.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

HENRY WYSOR has been appointed director of research of the Lehigh division of the Bethlehem plant of Bethlehem Steel Co. Mr. Wysor is a graduate of Virginia Polytechnic institute. From 1901 to 1904 he was with the Duquesne works of Carnegie Steel Co. where he was engaged in the laboratory, blast furnace and open hearth departments. In 1904 he became assistant professor of analytical chemistry in Lafayette college and later professor of metallurgy. In 1918 Mr. Wysor resigned from Lafayette college to become a member of Bethlehem Steel Co.'s organization, where for the past six years he has been associated with the metallurgical division, specializing in steel and field research work, particularly in the alloy mills products.

* * *

George F. Scott has been made purchasing agent of the American Radiator Co., Buffalo, N. Y., effective Feb. 16. Mr. Scott has been connected with the American Radiator Co., for many years.

* * *

F. L. Griffith, just elected a director of the Ohio Seamless Tube Co. to fill the vacancy caused by the death of I. H. Denton, Cleveland, is president of the Central Steel Co., Massillon, O.

* * *

W. R. Quinn has been appointed Pacific Coast agent with headquarters in San Francisco by the Combustion Engineering Corp., New York. Mr. Quinn formerly was manager of the fuel oil department. His temporary headquarters will be at 1132 Shotwell street, San Francisco.

* * *

Thomas S. Brown Jr., vice president and treasurer of the Eagle-Picher Lead Co. has announced his retirement at the annual meeting of stockholders at the company's plant in Cincinnati last week. Mr. Brown had been an important factor in the company and in the old Eagle White Lead Co. before the merger. He will retire on a farm with his family in lower California.

Arthur E. Bendelari, for the past ten years in charge of the company's operations in Missouri and Oklahoma, was elected to succeed Mr. Brown.

* * *

R. P. Hudson has been appointed chemist in charge of coal inspection for the American Rolling Mill Co., in the coal and coke department at Nellis, Boone county, W. Va. During the past year Mr. Hudson was an inspector in the coal department. He succeeds G. D. Chamberlain, recently appointed chief chemist of the Ashland division of the American company.

* * *

W. G. Hanson, formerly superintendent of the Verona iron ore mines, has been named assistant general superintendent of the ore mines operated by Pickands, Mather & Co. in Iron county, Mich. He will be assistant to C. E. Lawrence, general superintendent. He has been at Iron Mountain for 24 years with Pickands, Mather & Co., 13 of them as superintendent of the Verona properties.

E. R. KENNER

* * *

M. G. Henderson has been appointed district representative at Cleveland for the A. M. Byers Co., Pittsburgh and Girard, O., and his territory for the sales of wrought iron pipe will be northern Ohio and southern Michigan, in the Detroit district. He succeeds Fletcher Collins who has been transferred to the Pittsburgh office of the Byers company to do some special work in the sales department. Mr. Henderson has been identified with the Bethlehem Steel Co. at Pittsburgh in the plate and structural sales department, and prior to the merger with the Cambria Steel Co., in the charcoal iron tube department.

* * *

Harold F. Welch has been appointed New York district sales manager for the Niles-Bement Pond Co., 111 Broadway, New York. He was affiliated previously with the company's railroad department in that district. M. P. Kirk recently was appointed assistant sales manager, subordinate to E. L. Leeds. Mr. Kirk was formerly the company's representative in the Cincinnati district, where he now is being succeeded by Elmer Gates, of the Rochester office.

* * *

M. F. Findley, district sales manager at Chicago for the past nine years for the West Leechburg Steel Co., Pittsburgh, has been transferred to Detroit to take charge of the Michigan territory. He succeeds A. J. Artnan who has been transferred to Cleveland to take charge of an office recently established there. L. W. Briggs, formerly assistant to Mr. Findley at Chicago for the past four or five years, has been promoted to succeed the latter as district sales manager there.

* * *

E. R. Kenner, whose connection with the H. K. Ferguson Co., Cleveland, builder and engineer, has just been announced, for the past four years had been assistant sales manager of the Wellman-Seaver-Morgan Co., that city. He was in charge of sales in the hydraulic turbine, rubber machinery and engine departments, and supervised publicity and advertising for the Wellman company. He was born in Atlanta, Ga., Sept. 8, 1885. He was graduated from Georgia School of Technology, Atlanta, as a bachelor of science in mechanical and hydraulic engineering in 1907. From 1909 to 1916 he was connected with the Allis-Chalmers Mfg. Co. in various capacities. From 1916 to 1917 he was with the Firestone Tire & Rubber Co., Akron, O., and in 1918 to 1919 served as mechanical equipment superintendent for United States nitrate plant No. 2, Muscle Shoals, Ala. Mr. Kenner joined the Wellman-Seaver company upon severing his connection with the government and became connected with H. K. Ferguson Co. in December, 1924. He is a member of the American Society of Mechanical Engineers and the American Association of Port Authorities.

Obituaries

W. J. PATTERSON, head of W. J. Patterson & Co., sales representative on the Pacific Coast for steel interests, died Feb. 9 at his home in San Rafael, Calif. He was a prominent figure in steel circles in the Pacific Coast and intermountain states. He was manager of sales for the Midvale Steel & Ordnance Co. and the Cambria Steel Co. in the intermountain and Pacific Coast states until sale of those companies to Bethlehem Steel Co. He entered the employ of the Midvale Steel Co. in 1906 as manager of the Denver office and in 1909 was transferred to Mexico City in charge of the Mexican and Central American territory. In 1916 he was sent to San Francisco with the organization of the Midvale Steel & Ordance Co. He became manager of sales there in 1919. The Patterson company which he organized and headed, was sales representative for Laclede Steel Co., St. Louis Steel Products Co., Greenville, Ill.; J. R. Johnson & Co., Inc., Richmond, Va.; Interstate Iron & Steel Co., Chicago; Worth Steel Co., Railway Steel Spring Co., Union Steel Casting Co.

* * *

Hiram A. Neel, superintendent, Michigan Steel Casting Co., Detroit, died at his home in that city Feb. 18, age 36.

* * *

Samuel Weil, one of the founders of the United Shoe Machinery Co. at Boston, and a director in the Chatham & Phoenix National Bank, died recently in New York at the age of 79.

* * *

David F. Williams, connected with the bolt and nut industry for almost half a century died in Cleveland Feb. 16. Mr. Williams began work as an apprentice mechanic for the Bourne & Knowles Co. at the age of 13 and rose to managership of that organization. In 1910 he became master mechanic of the Lake Erie Iron Co., but suffered a paralytic stroke in 1918 which left him incapacitated.

* * *

Marshall Dwight Flanigan, assistant general manager of sales of the Hillman Coal & Coke Co., Pittsburgh, died suddenly at his home in Beaver, Pa., Feb. 15. Mr. Flanigan at one time served in various capacities with the Pittsburgh & Lake Erie railroad. Later he was commercial freight agent of the New York Central lines at Pittsburgh. He became affiliated with the Hillman Coal & Coke Co. in 1915, in the capacity in which he served at the time of his death.

* * *

Edwin H. Williams, superintendent of the screw machine department of the Colt Patent Fire Arms Mfg. Co., Hartford Conn., died suddenly at his home in Hartford recently. He was 81 years old and had been with the Colt Co. for 66 years. He began at the age of 13 in the polishing department and worked at various capacities in the manufacture of ordnance during the civil war.

W. J. PATTERSON

* * *

Randolph M. Goldsborough, aged 51, died suddenly in Best, Tex., Feb. 20. Four weeks ago Mr. Goldsborough was elected vice president of the International Supply Co., Tulsa, Okla., and was making an inspection tour of the company's 40 stores when he died. He was born in Parkers Landing, Pa., and a few years later moved with his family to Bradford, Pa. In 1891 he became associated with the Oil Well Supply Co., Pittsburgh and from 1910 to 1920 he was affiliated with the Union Tool Co., Los Angeles, Calif. In 1920 he returned to Pittsburgh and since that time until about a month ago had operated the Titusville Supply Co.

* * *

A. F. Rockwell, former president of the Bristol Brass Corp. and also of the New Departure Mfg. Co., Bristol, Conn., died recently of blood poisoning at New Britain, Conn. He was 62 years old, and prominent in many manufacturing enterprises throughout Connecticut. He was a leading figure during the world war has head of the Marlin Rockwell Corp., which operated 13 plants with more than 15,000 employes making machine guns for this country and for the allied governments. The son of a farmer in Stueben county, N. Y., Mr. Rockwell was thrown upon his own resources at the age of 13 at which time he entered a dry goods store in Chicago. At 17 he became manager of a country store, and at 20 he went into the fruit business. A few years later he tried the hardware business in Jacksonville, Fla. In 1888 he moved to Bristol, Conn., and started manufacturing bicycle bells. This was just at the time the bicycle craze hit the country and the plant expanded rapidly and was organized as the New Departure Mfg. Co. making bicycle parts.

Saves Much in Handling Railroad Scrap

Chicago, Feb. 24.—In 1924 the Illinois Central railroad sold 200,800 net tons of scrap, most of it iron and steel, for which it received $3,609,881, states William Davidson, general storekeeper, Chicago. In addition, practically all frogs, switch stands and similar items requisitioned for yard work have come from reclaimed material, and a large percentage of its supply bolts, nuts and washers has been removed from material going to scrap docks.

Until a few years ago scrap was assembled in bulk at division stores and forwarded to the general storehouse for sorting and reclaiming. Now, according to Mr. Davidson, each division storehouse sorts its scrap and much handling is saved. All brass embodied in other scrap is set aside and when sufficient accumulates it is separated with sledges.

Operate New Rolling Mill

Detroit, Feb. 24.—Production has been started by the Roehm Steel Rolling mills, organized last month, in the former plant of the Railway Steel Spring Co., Michigan avenue and Hubbard street. The plants contain over 100,000 square feet of floor space, and every facility for rolling hot steel. An 18-inch and a 9-inch mill constitute the major equipment, both now being in operation. The plant has an annual capacity of from 80,000 to 90,000 tons of finished steel. Charles M. Roehm, active in the steel warehousing business for 45 years, is chairman of the board, and T. F. Thornton, purchasing agent for the Detroit Steel Products Co. for 13 years is president.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

DIRECTORS of the Wellman-Seaver-Morgan Co., Cleveland, have been increased from nine to ten. Five new members of the board have been elected, James Smith and Frederick Sanderson of the Wellman, Smith, Owens Co. Ltd., London; Frederick Stadelman, New York, George P. Steel and H. P. Glidden, Cleveland. Directors re-elected include Edwin S. Church, George W. Burrell, John A. Penton and N. R. Fairland, Cleveland, and Francis Sieberling, Akron, O. Edwin S. Church was re-elected president and N. R. Fairland secretary and treasurer. Mr. Stadelman is in charge of sales in New York and Mr. Glidden is manager of sales at Cleveland. Election of Messrs. Smith and Sanderson of London gives representation to English interests which recently bought control of the common stock.

* * *

NAZEL ENGINEERING & MACHINE WORKS, Philadelphia, Pa., has appointed the E. L. Essley Machinery Co., Chicago agents for its line of air hammers in the Chicago territory.

* * *

PUBLIC SERVICE ELECTRIC CO. of New Jersey is completely equipping its plant at Burlington, N. J., installing eight 600-horsepower boilers and two 1418-horsepower cross drum boilers with steam purifiers.

* * *

NIAGARA FALLS SMELTING & REFINING CORP., Buffalo, N. Y., has elected William R. Hopkins president, Ernest G. Jarvis vice president and general mnager, Howard O. Babcock secretary and A. G. Maddigan treasurer.

* * *

LEWIS MILL SUPPLY CO., Helena, Ark., and the L. P. Brown Co., Memphis, Tenn., have been merged under the name of the Lewis-Brown Co., Inc., with $350,000 capital. T. W. Lewis is president and general manager, L. P. Brown and T. H. Baker, vice presidents; and W. C. French, secretary and treasurer.

* * *

BLAINE L. STONER was elected a director of the Conley Tank Car Co., Pittsburgh, at the recent annual meeting of that company. He is a vice president of the First National bank, Verona, Pa. Directors re-elected were: F. G. Conley, W. J. Curley, J. M. Holmes, W. J. Johnson, D. J. McLaughlin, H. N. Trimble and J. W. Ward.

* * *

NORTHERN ENGINEERING WORKS, Detroit, builder of cranes and hoists has elected officers as follows: Henry W. Standart, president and treasurer; William V. Moore vice president; Edward S. Reid, vice president and consulting engineer; Louis H. Olfs, secretary; S. E. Schneider, sales manager; R. R. Taylor, purchasing agent.

* * *

AN ADDITION was made recently to the plant of the Duplex Printing Press Co., Battle Creek, Mich., manufacturer of semicylindrical and tubular plate unit type superspeed rotary newspaper presses, stereotype machinery, and other equipment. I. L. Stone is chairman of the board, Irving K. Stone, president, H. F. Bechman, vice president and superintendent, C. G. Mechem, treasurer and M. M. Farley, secretary.

* * *

ELYRIA IRON & STEEL CO., Cleveland, has re-elected Hugh B. Wick president. Other officers continued in their positions are Myron A. Wick vice president, George F. White secretary and treasurer, G. C. Klippel assistant secretary, and W. J. Sampson assistant treasurer. Elmer Falk is purchasing agent and W. T. Bentz manager of sales. Officers and Mr. Bentz make up the board of directors.

* * *

DISSOLUTION of the creditors' committee which has been operating the business of the Henry A. Hitner's Sons Co., Philadelphia, the past 18 months, has been effected and stockholders have resumed control. J. G. Hitner has been elected president, Edward L. Lupton vice president, H. A. MacMullan secretary, W. Perry E. Hitner treasurer and F. R. Johnson assistant secretary and treasurer.

* * *

BECAUSE Manitowoc, Wis., has undertaken the construction of a 250-foot bascule bridge with 80 feet clear space in the river leading to the plant of the Manitowoc Shipbuilding Corp., changes are being made in the yards of the latter to accommodate the largest lake vessels. Crane runways and berths are being enlarged to accommodate the larger craft. Work will be started at once on a 500-foot freighter for the Rockport Steamship Co., for delivery in August, by which time the enlarged channel will allow it to be taken into Lake Michigan.

* * *

ENLARGEMENT of about 40 per cent in the capacity of the Nash Motors Co., Kenosha, Wis., will result from present additions. Changes are under way at the main plant at Kenosha and the branch plant at Milwaukee. Plans also are being made for a 5-story addition to the plant of the Seaman Body Co., a subsidiary, which will double its capacity. The additions will require about $1,750,000 worth of machine tool and conveying equipment.

* * *

INTERESTS of H. H. LaVercomb in the Tool Salvage Co., Detroit, have been purchased by a group of Detroit men headed by Frank E. Price, for some years Michigan sales manager of the Elwell Parker Truck Co., Cleveland. N. J. Chapoton, formerly master mechanic of the Northway Motors Co. and before that superintendent of tools for Dodge Bros., becomes general manager. The company specializes in reconditioning drills, reamers and milling machines.

* * *

UNIVERSAL CRANE CO., Elyria, O., has appointed several representatives in the Southeast. G. W. VanKeppel, 10 West Harris street, Atlanta, Ga., has been given the Atlanta territory, Fred D. Marshall, Inc., Seaboard Bank building, Columbia, S. C., the South Carolina territory, E. F. Craven, 513 South Eugene street, Greensboro, N. C., all of North Carolina and the Graham B. Bright Co., 1112 Virginia Railway & Power Co. building, Richmond, Va., the Virginia territory.

* * *

GRAVER CORP., East Chicago, Ind., has been given the exclusive sales and manufacturing rights for the Jenkins cracking process. Sales will be handled through the offices of the Graver Corp. and fabrication at its plants at East Chicago. The personnel of the Jenkins Petroleum Process Co. remains unchanged with W. C. Black, A. C. MacGuire and U. S. Jenkins in control of patent rights and royalties, with offices at 208 South LaSalle street, Chicago.

Industrial Business Changes

AMERICAN Range Corp. of Minnesota, Shakopee, Minn., has taken oven the plant of the American Range & Foundry Co., Twenty-first and State streets, East St. Louis, Ill., which went into bankruptcy several months ago. Its assets were bought up by the former company. E. L. Simpson is manager.

* * *

Palmer Steel Co., Springfield, Mass., has moved its Connecticut office to 1056 Chapel street, New Haven, Conn.

* * *

Indianapolis Pump & Tube Co. has moved its offices from Greenwood, Ind., to the National City Bank building, Indianapolis, leaving only its factory office at Greenwood.

* * *

Clark Machinery Co., Cleveland, machinery dealer, has been appointed sales agent in that territory for spot welders manufactured by the Acme Welding Co., Hoboken, N. J.

* * *

John L. Key, Inc., San Francisco, Calif., importer of iron and steel products, has removed his offices from the Call building to 1164 Market street.

* * *

Joseph Dixon Crucible Co., Jersey City, N. J., has moved its Boston office from 49 to 80 Federal street in the new Chamber of Commerce building.

* * *

Igo Mfg. Co., Chicago Heights, Ill., manufacturer of automobile accessories, will remove to Kenosha, Wis., where a new plant will be built. Thomas Igo is president and W. H. Light secretary.

* * *

Standard Turbine Corp., Scio, N. Y., has appointed J. F. Shouse & Co., 70 Kenyon building, Louisville, Ky., and Bradley T. Johnson, 708 Mutual building, Richmond, Va., district representatives in those localities.

* * *

S. W. Sargent & Co., 1600 Walnut street, Philadelphia has been appointed district sales manager fo the Falcon Steel Co. and the Falcon Tin Plate Co., Niles, O., for the Philadelphia district.

* * *

The Pacific Graphite Works, Oakland, Calif., has been appointed coast representative of the J. W. Paxson Co., Philadelphia, maker of foundry facings, supplies and machinery. A warehouse is being built to carry the new line.

* * *

The George F. Crivel Co., 430 Ellicott square, Buffalo, N. Y. has been appointed representative for the J. W. Paxson Co., Philadelphia, in Buffalo and Western New York, and will handle molding sands, supplies and equipment.

* * *

Pennsylvania Crusher Co., Stephen Girard building, Philadelphia, has appointed Stratton-Cahoon Co., 809 McIntyre building, Salt Lake City, Utah, as district agents for the territory around Salt Lake City.

* * *

Possession of the M. B. Schenck factory at Meriden, Conn., has passed to the Stewart Warner Co. and it will be equipped as a factory branch. The Bassick Co., manufacturer of casters, has been occupying the plant.

* * *

The United Hardware & Tool Corp. has succeeded the United Hardware & Tool Manufacturers of America, 30 Church street, New York, representing manufacturers in export trade. E. R. Wilner is manager.

* * *

E. A. Eddy Machine Co., Providence, R. I., has been formed to take over the business conducted by the late E. A. Eddy in new and used machinery. L. M. Lincoln is president and general manager and Rosanna Eddy secretary and treasurer.

* * *

Motor Products Corp., Detroit, Mich., has bought all the assets of the Parsons Mfg. Co., 5301 Bellevue avenue, Detroit, as a going concern, assuming all contracts and unpaid accounts. A. L. Lott is general manager.

* * *

Wright Tool Co., Bowling Green, Ky., has been dissolved as a corporation and the business has been taken over by J. H. Wright and C. G. Wright who will operate it as a private concern. C. E. Wood is liquidating agent for the corporation.

* * *

Sale of his entire interest in the Mechanical Supply Co., Battle Creek, Mich., has been made by E. D. Fitzpatrick, its president, to H. J. McMullen, its treasurer, who becomes president. H. N. Dunning has been made vice president and W. J. McMullen treasurer.

* * *

Charles G. Brieman, since 1889 engaged in foundry, machine shop and boiler business at Juneau, Wis., has transferred his business to his son, Charles F. Brieman and will retire. The business is carried on in the name of the Juneau Foundry & Boiler Works.

* * *

Standard Cast Iron Pipe & Foundry Co. is the new name of the business at Atlanta, Ga., formerly known as the Chemical Engineering & Foundry Co. The change is made the better to represent its line of production. John C. Mooar is secretary.

* * *

Barnum Machine & Pattern Co., New Haven, Conn., is the name adopted after reorganization of the former S. H. Barnum Foundry Co. The foundry department has been discontinued. James M. Woolson, formerly manager of the S. H. Barnum Co., is president.

* * *

Denmark Machine & Foundry Co., Denmark, S. C. has bought the plant and equipment of the T. J. Price Foundry & Machine Co., Charlotte, N. C., and will add to its equipment for the production of sawmill edgers and trimmers. T. E. King is general manager.

* * *

Dana Houston has bought the interest of George E. Bond in the firm of E. E. Bond & Co., Inc., factory brokers and industrial specialists. Newark, N. J. The firm was organized in 1845 as King & Bond. Mr. Houston joined the firm in 1913 and became a partner in 1917. The business has been reorganized as Dana Houston, Bond & Co., Inc. with Mr. Houston president and L. E. Hatfield as secretary and treasurer.

Warehouse Steel Prices

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles	3.20c
New York	3.24c
Philadelphia	3.20c
Pittsburgh	2.90c
Portland	3.25c
San Francisco	3.15c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c

IRON BARS

Boston	3.265c
Buffalo	3.35c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
New York	3.24c
Philadelphia	3.20c
St. Louis	3.15c

REINFORCING BARS

Boston	3.25c to 3.50c
Buffalo	3.40c
Chicago	2.60c to 2.70c
Cincinnati	3.30c
Cleveland	3.10c
Detroit	3.15c
Los Angeles, C. L.	3.60c
Los Angeles, L. C. L.	4.00c
New York	2.80c
Philadelphia	2.80c to 3.20c
Pittsburgh	2.30c to 2.55c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.20c
Detroit	3.25c
Los Angeles	3.25c
New York	3.34c
Philadelphia	2.90c to 3.25c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.15c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.20c
Cleveland, 3/16-inch	3.425c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Los Angeles	3.25c
New York	3.34c
Philadelphia	2.90c to 3.20c
Philadelphia, 3/16-inch	3.06c to 3.36c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.15c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.35c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	4.05c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.45c to 3.76c
Detroit	4.00c
Los Angeles	4.20c
New York	3.89c
Philadelphia	3.85c
Portland	4.50c
San Francisco	4.20c
Seattle	4.50c
St. Louis	3.90c
St. Paul	4.05c

NO. 28 BLACK SHEETS

Boston	5.20c
Buffalo	4.75c
Chicago	4.50c
Cincinnati	4.55c
Cleveland	4.35c to 4.55c
Detroit	4.65c
Los Angeles	5.25c
New York	4.75c
Philadelphia	4.85c
Portland	5.00c
San Francisco	5.25c
Seattle	5.50c
St. Louis	4.80c
St. Paul	4.85c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.85c
Chicago	5.50c
Cincinnati	5.65c
Cleveland	5.45c to 5.65c
Detroit	5.75c
Los Angeles	6.25c
New York	5.75c
Philadelphia	6.00c
Portland	6.00c
San Francisco	6.25c
Seattle	6.50c
St. Louis	5.80c
St. Paul	5.65c to 5.90c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.85c
Detroit	3.80c
Los Angeles	4.20c
New York	3.99c
Philadelphia	3.95c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.00c
Seattle	4.25c
St. Paul	3.90c

HOOPS

Boston	5.50c
Buffalo	4.40c
Chicago	4.15c
Cleveland, 1-inch and wider No. 20 and heavier	3.85c
Cleveland, narrower than 1-inch	4.35c
Detroit	4.30c
New York	4.49c
Philadelphia, 1-inch and wider	3.95c
Philadelphia—narrower than ¾-inch	4.45c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.70c

COLD FINISHED STEEL

Boston (shapes)	4.65c
Boston (rounds)	4.15c
Buffalo (rounds)	4.20c
Buffalo (shapes)	4.70c
Chicago (shapes)	4.30c
Chicago (rounds)	3.80c
Cincinnati (rounds)	4.05c
Cincinnati (shapes)	4.55c
Cleveland (rounds)	4.00c
Cleveland (shapes)	4.50c
Detroit (rounds)	4.10c
Detroit (shapes)	4.60c
Los Angeles (rounds)	5.25c
New York (rounds)	4.15c
New York (shapes)	4.65c
Philadelphia (rounds)	4.15c
Philadelphia (shapes)	4.65c
Pittsburgh (rounds)	3.80c
Pittsburgh (sq. hex. and flats)	4.30c
Portland	5.00c
San Francisco (rounds)	5.25c
Seattle (rounds)	4.75c
St. Paul (rounds)	4.05c

FOREIGN IRON AND STEEL

Swedish hollow drill steel New York, duty paid	15.00c
Swedish iron bars round New York, duty paid	6.75c
flats and squares. New York, duty paid	7.00c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe (Subject to Shading)

	Black	Galvanized
¼-⅜-inch butt	—31	+ 2
½-inch butt	—41	—24
¾-inch butt	—46	—32
1/3-inch butt	—48	—34
3½-inch lap	—44	—30
7-8-inch lap	—41	—11
9-10-inch lap	—35	— 8
11-12-inch lap	—34	— 6

Wrought Iron Pipe

	Black	Galvanized
¼-⅜-inch butt	+44	+78
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1-1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
3-6-inch lap	—11	+ 6
7-12-inch lap	— 3	+16

Some Warehouse Prices Moving Upward

PRICES on products from iron and steel warehouses are moving upward slowly. Increased buying has strengthened the market and a stronger tone permeates the warehouse field. Advanced mill prices have resulted in an upward revision in but few warehouse centers, although spasmodic increases in varied products already have been made. In New York an advance of above 5 per cent has been made on nuts, bolts and rivets, tank rivets being quoted at 50 and 10 off; machine bolts, large and small, and lag screws at 40 and 10 off. Hot pressed nuts for 100 pounds are quoted $2.75 off, as compared with $3, the previous price. Other quotations there are unchanged. In Boston, sheets have been marked up $2 a ton by leading interests. Quotations in the Cleveland, Chicago and St. Louis districts are firmer although prices have not been advanced to any extent. In Pittsburgh district one dealer is quoting 2.55c, Pittsburgh, on concrete bars. Shape, plate and reinforcing bar price spreads enlarged at Philadelphia.

In the East the daily basis of business in February is expected to exceed January's, and in some places to surpass it also in total volume. A marked increase in tonnage is expected in March, April, May and June. Many jobbers are accumulating stocks preparatory to heavy spring demand, and in so doing are helping extend mill deliveries which in turn are creating more demand for products from warehouses. Some falling off in building material demand is noted along the Mississippi although the movement of these products to the South continues heavy.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

Where additional information is presented, reference is made to date of issue in which previous item appeared.

BESSEMER, ALA.—Bessemer Galvanizing Co. is installing an additional dipping pot and other equipment that will double its capacity. W. M. Rogers, superintendent of the Nashville Bridge Co. is in charge.

BIRMINGHAM, ALA.—Alabama Manganese Corp. has been incorporated to operate iron ore mines, capital $6000, by W. L. Smith, J. F. Stallings, and W. O. Lanning.

BIRMINGHAM, ALA.—American Castings Co., Ninth avenue, has increased its capital from $50,000 to $100,000 and will build an addition.

BIRMINGHAM, ALA.—McWayne Cast Iron Pipe Co., 3600 Eleventh avenue, North has started construction of the second unit of its new foundry plant. Capacity will be doubled by improvements now under way.

BIRMINGHAM, ALA.—Davis Pipe & Fittings Co., 830 North Forty-sixth street, has bought the plant of the Iron City Pipe & Foundry Co. and after alterations and additions will continue its operation. Ben Davis is president.

BIRMINGHAM, ALA.—G. L. Anderson Brass Works, Inc., has been incorporated with $100,000 capital to operate a brass foundry. E. T. Shuler, Gadsden, Ala., is president, G. L. Anderson vice president and J. E. Anderson secretary.

CORONA, CALIF.—Corona Silicate Sand Co. is building a sand cleaning plant 30x60 feet. Western Engineering Co., Hollingsworth building, Los Angeles, is engineer.

LOS ANGELES—Podas Foundry Co., Huntington Park, has completed its new plant on South Alameda street and will start operations at once, removing equipment from the old plant.

LOS ANGELES, CALIF.—National Automatic Pan Corp. has bought a site and will build a plant to manufacture machinery for automatic production of bakery pans. W. H. Pierece is president.

LOS ANGELES—The Pacific Metal Products Corp., Los Angeles, has been incorporated with $200,000 capital, by A. I., Harry E. and Michael Rudolph. Michael Rudolph, 1001 Lane Mortgage Bldg. is attorney.

LOS ANGELES—Coast Rivet Co., E. M. Smith, president, will build the first unit of a rivet plant at once, 100x200 feet, to manufacture tubular and semi-tubular steel, brass, copper and aluminum rivets. H. S. Beals is president and Walter G. L. Beals secretary.

SAN FRANCISCO—The Pacific Elevator & Equipment Co., 1129 Howard St., will build a 1-story concrete machine shop on Rausch street near Howard street.

BRIDGEPORT, CONN.—Bids will be asked shortly by the Lock Steel Chain Co., on the erection of a 1-story addition, 83 x 156 feet. C. W. Walker Jr., this city, is architect.

BRIDGEPORT, CONN.—Acme Shear Co. is in the market for additional foundry equipment and plate working machinery. Dwight C. Wheeler is secretary.

NEW BRITAIN, CONN.—Stanley Works has let contracts for equipment for a power plant under construction at Rainbow, Conn., including two 6000-horsepower turbines, let to the S. Morgan Smith Co., York, Pa., and two generators to the General Electric Co., Schenectady, N. Y.

WATERBURY, CONN.—A 1-story, 45x77-foot addition will be erected by the Waterbury Fastener Co., Baltimore, Md. Approximately $100,000 will be expended here by Massons Express, on the erecton of a 3-story, 90x170-foot garage and warehouse.

TAMPA, FLA.—Hawthorne Concrete Works has been incorporated with $30,000 capital by Ward H. Wadsworth, president and F. A. Blair, secretary. A plant will be built.

WEST PALM BEACH, FLA.—Palm Beach Plumbing Supply Co., jobbers of plumbing supplies and fittings, is building a warehouse in West Palm Beach, to cost about $100,000.

ATLANTA, GA.—Conklin Tin Plate Co. will erect a 3-story reinforced concrete and brick building at 10 South Moore street, costing $60,000. E. C. Wachendorff is architect.

ATLANTA, GA.—The Roach Co., J. J. and E. J. Roach, has leased property at 585 Marietta street and is establishng a machine shop and welding plant for the manufacture of gasoline storage tanks.

COLUMBUS, GA.—Dismuke, Iron Works has been incorporated with $12,000 captal by W. H. Dismuke Sr., W. H. Dismuke Jr., and Fred W. Dismuke.

COLUMBUS, GA.—Concrete Products Co., 1722 Hamilton avenue, has been organized with W. M. Camp president, and will build a plant for the manufacture of reinforced concrete pipe.

WASHINGTON, GA.—Pope Mfg. Co., M. J. Dicks, president, Dublin, Ga., will enlarge the company's cottonseed oil mill at Washington.

CHICAGO—Chicago Job Colorpress Co., Adams and Sangamon streets, William S. Tate, president, will build 3-story and basement factory 50 x 60 feet.

CHICAGO—M. C. M. Co., 175 North Michigan avenue, has been incorporated with $5,000 capital to manufacture, install and equip machinery, by H. J. Moeller, L. R. Crooks, and W. M. E. Mackenzie.

CHICAGO—Great Western Plating Mfg. Co., 23 West Illinois street, has been incorporated with $15,000 capital by Sam Novitsky, J. F. Miller and Philip Simon. Huebsch & Piquette, City Hall square building, are correspondents.

CHICAGO—Excel Pattern & Foundry Co., 2057 West Van Buren street, has been incorporated with $15,000 capital to manufacture patterns by William Elsner, George Grassmeyer and P. J. Murphy. Reliance State bank, Madison street and Ogden avenue, is correspondent.

CHICAGO—Nuway Boiler & Engineering Co., 53 West Jackson boulevard, has been incorporated to manufacture horizontal tube boilers, by Elmer A. Kaiser, Paul G. Kaiser and Anna M. Kaiser John C. Teevan, 111 West Washington street, is correspondent.

CHICAGO—Hayes Equipment Co., 1615 Michigan boulevard, has been incorporated with $300,000 capital to manufacture tools, machines and apparatus by H. P. Vickers, George A. Mortland and Thomas J. Tubbs. James Levett & Co., Temple building, is correspondent.

CICERO, ILL.—Kropp Forge Co. is building an additional unit, Austin Co., Cleveland, engineers, one story, steel frame, for forge shop. Charles A. Kropp is president.

CICERO, ILL—Harold M. Pitman Co., manufacturer of engravers' metals, has let a contract to the Austin Co., Cleveland, for an additional unit to its plant.

MARSEILLES, ILL.—J. R. Burrell Co. has been incorporated with $4,000 capital to manufacture machinery by Wesley B. Pusey, Richard F. Knott and I. M. Martin. Clarence Griggs, 936 Central Life building, Ottawa, is correspondent.

ELKHART, IND.—Engman Range Eternal Co. has been incorporated with $300,000 capital to manufacture stoves, ranges and heaters, by Silas McClure, Minneapolis; Elias H. Bottun, Milwaukee; Harry A. Engman Jr., Goshen.

GOSHEN, IND.—Chase Bag Co., New York, has awarded to the Austin Co., Cleveland, a contract for a 1-story branch plant at Goshen with 23,000 square feet of floor space. E. K. Ludington is president and G. D. Adams, Cleveland, is vice president.

INDIANAPOLIS, IND.—P. & B. Foundry Co. has leased a plant at 424 South Pennsylvania street and will establish a foundry.

INDIANAPOLIS, IND.—Hoosier Foundry Co. has been incorporated to operate a foundry and machine shop by Edward S. Workman, George Workman and Charles E. Hall.

SOUTH BEND, IND.—Superior Nonferrous Foundry Co. has been incorporated with $10,000 capital, by Clarence, Hope P., and Anna I. E. Walters.

WARSAW, IND.—Dalton Foundries has started additions to double capacity.

SHREVEPORT, LA.—Eco-Thermal Stove Co. Lebanon, O., is planning to establish an assembly plant here to handle business for the southern states. John A. Blair, Lebanon, O., is treasurer and general sales manager.

WEST PARIS, ME.—Oxford Mining & Milling Co., Portland, is bulding a grinding mill 48x 98 feet, to grind feldspar.

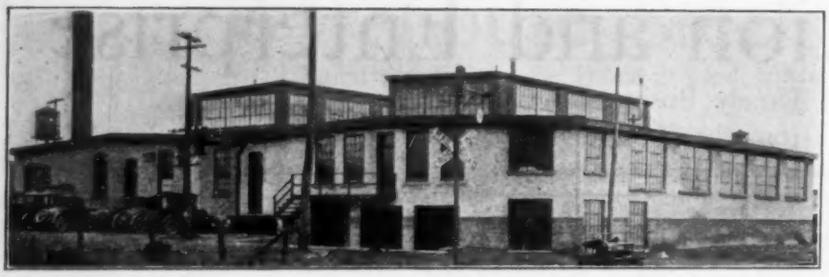
BALTIMORE—Bids were closed Feb. 24 by the Standard Gas Equipment Corp. on the erection of a $60,000, 1-story factory, 102x136 feet.

BOSTON—F. D. Kirby, Inc., real estate, machinery and patents, has been formed with $50,000 capital by Francis D. Kirby and Lucille P. Herlihy of Newton, Mass., and Edward J. Down of Brookline, Mass.

BOSTON—The Clemson Knife Co., cutting instruments, has been incorporated for $50,000 by Clarence E. Clemson of Stoneham Mass., Florence E. Clemson of Woburn, Mass., De Witt T. Cope of Melrose, Mass., and Edward H. Chase of Concord, Mass.

CAMBRIDGE, MASS.—General Radio Co. is taking bids through Lockwood, Greene & Co. on a 4-story and basement reinforced concrete, 50 x 95 feet.

FALL RIVER, MASS.—The Gilbert Welding & Tank Co. has been incorporated with



Michigan Metal Products Co., Battle Creek, Mich., has added a building to its plant, practically doubling its size. It produces door checks, controls and openers, mail boxes, dust pans and other metal specialties. V. H. Wattles is president of the company.

1000 shares without par value by Patrick H. Harrington, James H. Kay, Harold B. Kay, Thomas E. Lyons, and George J. Gilbert, all of Fall River.

WORCESTER, MASS.—New England Implement Co., Inc., automotive equipment and accessories, has been formed with 1000 shares without par value capital by Walter H. Livingstone, Ruth E. Price, and Stanley G. Barker, all of Worcester.

ALBION, MICH.—Union Steel Products Co., North Berrien street, has been incorporated with $100,000 capital to manufacture wire goods, baking equipment and fabricated steel by George C. Dean, Brckway Dickie, Fred R. Sindecase and W. Clark Dean.

DETROIT—Huron Forge & Machine Co. has been incorporated to manufacture metal products, $150,000 capital, by Jervis W. Webb, Emil F. Westover and William E. Essery.

DETROIT—Anchor Steel & Engineering Co. has been incorporated with $10,000 capital to manufacture and deal in structural steel by Gerrit Waalkes, 82 Grove street, Highland Park, and others.

DETROIT—Detroit Resilient Wheel Co., has been incorporated to manufacture motor vehicle wheels and accessories, with $3000 capital, by Giuseppe Ferrari, 3800 Fisher avenue, Detroit, Harry J. Connine, Birmingham and Anthony Maiullo, Detroit.

LANSING, MICH.—Wilson Art Metal Co. has been incorporated with $1000 capital to manufacture automobile accessories, by J. W. Wilford, 1017 Kalamazoo street and others.

YPSILANTI, MICH.—The U. S. Pressed Steel Co. has completed an addition 65 x 80 feet to increase production.

ST. LOUIS, MO.—Crescent Foundry Co., 2852 Lyon street, L. W. O'Neill, president, will build a 1-story foundry 95x180 feet.

GARWOOD, N. J.—A $200,000 plant addition, 75x100 feet, will be erected here by the Aeolian company, 29 West Forty-second street, New York City, manufacturers of player pianos, talking machines, etc.

ORANGE, N. .—The Moore Calculating Machine Co .has acquired the local plant of the Orange Hat Box Corp., which it will remodel and equip as an additional unit.

TRENTON, N. J.—Plans are under contemplation for the erection of a $50,000 factory building for the Federated Metals Corp. The proposed structure will be two stories high, 100 x 200 feet.

BUFFALO, N. Y.—Rex Labeling & Machine Corp. has been incorporated with $100,000 capital by J. L. and B. M. Brookhart and G. A. Dudley. Aaron & Dautch, Buffalo, are attorneys.

BUFFALO, N. Y.—Buffalo Tool & Stamping Corp. has been incorporated with $30,000 capital to operate a machine shop, by E. Wedekindt, G. Leitze, R. Mehnert. Grass, Grass & Gerken are attorneys.

JAMAICA, N. Y.—A substantial list of equipment is contemplated for installation in the proposed $2,000,000 high school to be erected here, plans for which have been prepared by Wm. H. Gompert, Flatbush avenue extension and Concord street, Brooklyn.

LONG ISLAND CITY—A $50,000 plant will be erected here by the Renaissance Bronze & Iron Works, Inc., 3876 Park avenue, New York City. The company is now inquiring for approximately 100 tons of structural steel, indicating that work is to go ahead at once.

NEW YORK—Perkins Automatic Steel Curtain Corp. has been incorporated with $500,000 capital by S. R. Bierman, F. A. Hawken and J. J. Heckler. W. J. Dawley, 2 Rector street, is attorney.

NEW YORK—Goldberg & Newmann, Inc., has been incorporated with $5,000 capital to conduct an iron and steel business, by J. Goldberg, 545 Riverdale avenue, and B. Neumann, 1312 Putnam avenue, Brooklyn.

NEW YORK—Associated Metals & Minerals Corp. has been incorporated with 3000 shares at $100 each and 5000 shares of common, no par value, by W. D. Cunningham, H. G. Carroll and G. F. Bailey. Gleason, McLanahan, Merritt & Ingraham, 165 Broadway, attorneys.

NEW YORK—Associated Metals & Mineral Corp., 100 East Forty-second street, has been incorporated with $300,000 capital, representing 3000 shares of preferred at $100 per share and 5000 shares of common with no par value, to trade in metals and minerals, Charles Hardy is president, R. M. Atwater Jr., vice president, A. Rimberg vice president and treasurer, E. E. Lejeune assistant treasurer and J. J. Haesler secretary.

RENSSELAER, N. Y.—Rehfuss-Begley Machine Corp. has been incorporated with $20,000 capital, by R. H. and J. R. Rehfuss and J. G. Regley. O. J. Flynn, Albany, is attorney.

SYRACUSE, N. Y.—Hedwyn Balancer Co. has been incorporated with 200 shares of common stock no par value, to operate a machine shop, by H. G. and M. V. Rederson and W. Aridings. Hancock, Door, Spriggs & Shove, Syracuse, are attorneys.

BILTMORE, N. C.—Asheville Supply & Foundry Co., R. D. Hildebrand, president, will build a plant this year and a steel warehouse and fabricating shop.

CHARLOTTE, N. C.—Terrell Machine Co. will add to its plant this spring to increase output. Lockwood, Greene & Co. are engineers.

CHARLOTTE, N. C.—W. G. Jarrell Machine Co., 20 West Fourth street has awarded contracts for a machine shop, 50 x 150 feet. W. G. Jarrell is president.

HIGH POINT, N. C.—Victor Stove Works has been incorporated with authorized capital $100,000 and $60,000 subscribed, by A. Sherrod, W. A. Sherrod, Guy Ralston and J. W. Montgomery.

KINSTON, N. C.—Trinity Concrete Products Co. has bought a site on East North street and will build a plant for making concrete products. Alfred Ashford, is manager.

LA GRANGE, N. C.—Hardy & Newsom,

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron	$5.65
Mesabi bessemer, 55 per cent iron	5.40
Old Range nonbessemer, 51½ per cent iron	4.90
Mesabi nonbessemer, 51½ per cent iron	4.75

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.00
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.50 to 10.00
Algerian low phosphorus, 52 to 54 per cent	10.50 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent.	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	9.00 to 10.00
Spanish foundry or basic, 50 to 54 per cent	8.00 to 9.00
Algerian foundry and basic, 50 to 54 per cent	8.00 to 9.00

Manganese Ore

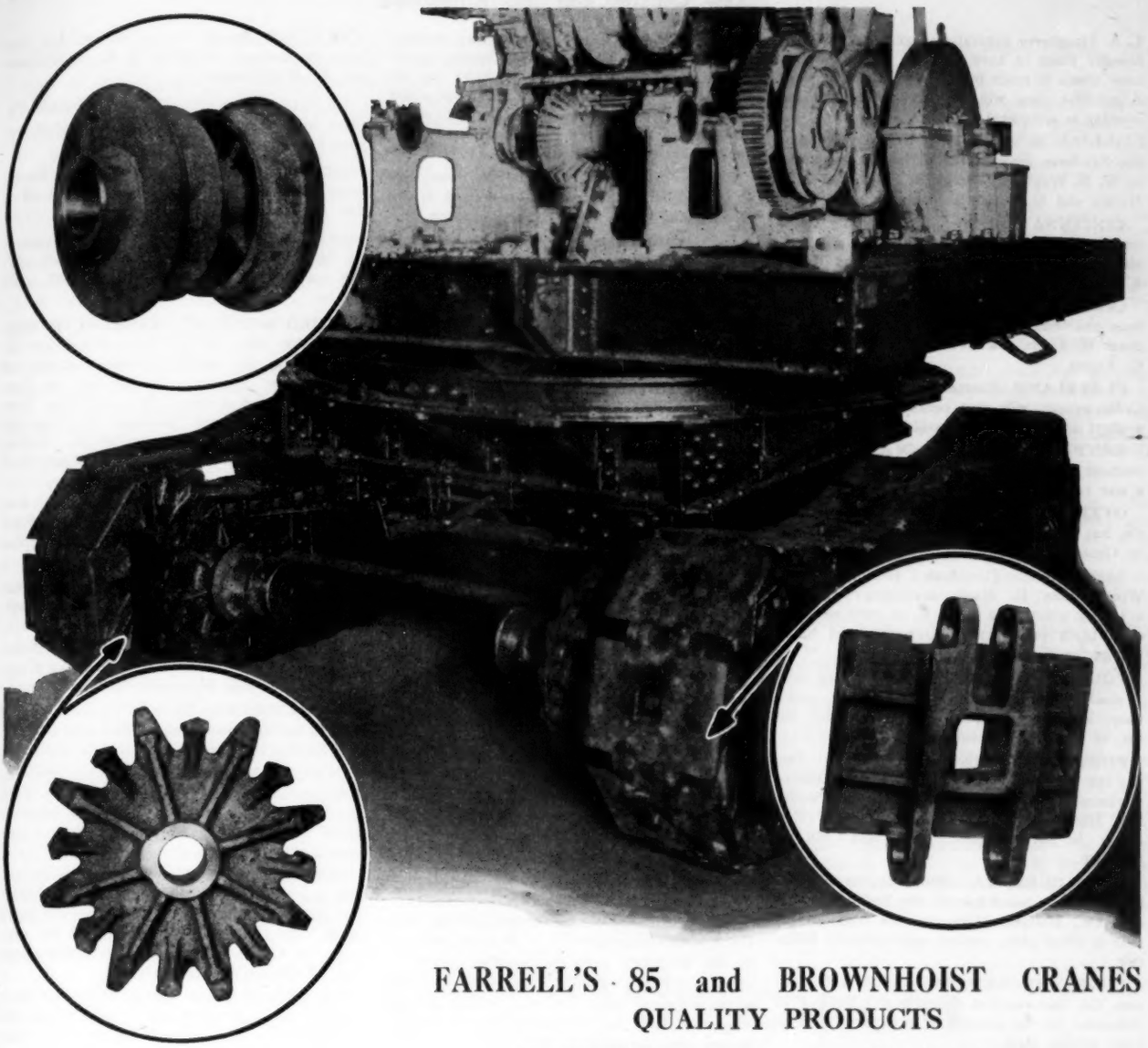
Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent....nominal
Indian, minimum 47 per cent....nominal
Caucasian, 53 to 55 per cent ....
.....Ordinary, nominal c.i.f. tidewater
.....Washed, 42 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.50 to 20.00
Washed gravel, imported duty paid eastern tidewater, per net ton	17.50 to 18.50



FARRELL'S 85 and BROWNHOIST CRANES
QUALITY PRODUCTS

BROWNHOIST cranes enjoy a world-wide reputation for performance, sturdiness of construction, freedom from replacements and for standing up under the most severe service.

It was natural therefore that for those parts subjected to extreme strains and excessive wear that FARRELL'S 85 castings should be used, because only the best of materials and construction go into BROWNHOIST cranes.

FARRELL'S 85 is a special purpose electric furnace steel developed to meet the need for a steel for castings requiring super strength, toughness and wear-resisting qualities. The Brown Hoisting Machinery Company after testing FARRELL'S 85 castings under the severest kind of service adopted them for use on their number one crane for rollers, treads, sprockets, driving pinions and other parts subject to excessive strains and wear.

The story of this new steel is interestingly told in an attractive little book which we shall be glad to send you on request.

Farrell's 85

The Farrell-Cheek Steel Foundry Co.
Sandusky, Ohio

J. A. Daugherty general manager, are bulding a foundry plant to have capacity of six tons per hour which is much in excess the present plant. A machine shop will be constructed when the foundry is completed.

ALLIANCE, O.—Weghorst Steel Stamping Co. has been incorporated to manufacture toys, by W. E. Weghorst, George R. Floyd, and C. L. Haines and has leased a plant.

CINCINNATI—Fisher Special Mfg. Co., screw machinery products, will build a 1-story plant at Dover & Morgan streets. Max Penker & Son have the general contract.

CINCINNATI—Art Bronze & Tablet Co. has been chartered with $500 capital stock by Mortimer H. Lyon, Harvey A. Rogers and Walter C. Taylor.

CLEVELAND—Central Brass Mfg. Co., 6203 Cedar avenue, will start construction at once of a plant at 2956 East Fifty-fifth street.

KENT, O.—The Gouglar Machine Co. announces it will build a new plant shortly on a site recently purchased.

OVERPECK, O.—Buckeye Mfg. & Foundry Co. has been incorporated with $175,000 capital by Oscar Eberhardt and Louis P. Gurm.

SANDUSKY, O.—Mack Iron & Wire Works, John D. Mack, president, will build a 1-story plant 56 x 120 feet, of steel and concrete block construction, to replace the building damaged by a tornado.

TOLEDO, O.—Union Tank Car Co. will build a steel building 80x200 feet as a car repair shop, adjoining the plant of the Standard Oil Co., of which it is a subsidiary.

PORTLAND, OREG.—Hurley-Mason Co., has the general contract for erection of 3-story reinforced concrete hotel building at Twelfth and Morrison streets, 100 x 100 feet. Carl Linde is the architect. The cost will be $135,000.

BETHLEHEM, PA.—Approximately 50 acres have been purchased here by the Bethlehem Furnace Co., Holland, Mich., for the erection this year of three units, costing approximately $250,000.

CONSHOHOCKEN, PA.—The C. & D. Battery Co. has awarded contract to Henry P. Schneider for the erection of a factory building, from private plans.

JOHNSTOWN, PA.—Mitchel Spring Co., Harvey Mitchel, vice president, will take bids soon on a 1-story addition.

LITITZ, PA.—Animal Trap Co. of America has let a contract to the Austin Co., Cleveland, for a 1-story plant with 30,000 square feet floor space, full side and monitor lighting.

McDONALD, PA.—Pittsburgh File & Steel Co., W. S. Lockhart, manager, will build a 1-story factory 45x360 feet, taking bids about Feb. 25.

PHILADELPHIA—Plans are being prepared by Philip S. Tyre, architect, for a 6-story manufacturing building for Joseph J. Greenburg, Broad and Huntington Park.

PHILADELPHIA—A general contract for the erection of a $40,000 factory building for Bolger Bros., 1139 East Chelten, has been awarded to E. E. Hollenback, Inc., 1804 Brandywine. *Noted Feb.* 19.

PHILADELPHIA—General contract will be placed shortly by the F. A. North Co., 1306 Chestnut street, for the erection of a 5-story piano factory, 28 x 178 feet, costing $175,000. W. A. Barnes, Perry building, is architect.

PHILADELPHIA—A $30,000 service station for Reynold H. Greenberg, at the northwest corner of Sixteenth street and Lacoming avenue, has been awarded to John Schnabel, Inc., Denckla building.

PHILADELPHIA—Plans are being prepared by John Melloy's Sons Co., 1419 Spring Garden street, manufacturer of metal products, for the erection of a plant to replace that portion which recently was badly damaged by fire. It is estimated that the damage to buildings and equipment was approximately $100,000.

READING, PA.—A 100x110-foot, 1-story machine and forging shop will be erected at the repair works here of the Reading Company.

READING, PA.—Work will be started shortly by the Reading Foundry & Supply Co. on the erection of an addition.

BRISTOL, TENN.—Lazote Co. and Du Pont interests are making plans to build a by-products coke plant at South Clinchfield, Va. S. A. Wartenberg is president of the Lazote Co.

CHATTANOOGA, TENN.—Tennesse Furniture Co. has let contract for a warehouse to cost about $100,000.

KNOXVILLE, TENN.—Tuckahoe Iron Products Co. has been incorporated with $100,000 capital by W. C. Anderson, Robert McConnell and Charles Seymour.

MEMPHIS, TENN.—N. O. Nelson Mfg. Co. is having plans made for a 2-story office building and warehouse and bids will be asked shortly.

RICHARD CITY, TENN.—Dixie Portland Cement Co. plans improvements to its plant to cost $200,000, including equipment. W. H. Klein is general superintendent.

BRENHAM, TEX.—Beaumier Iron Works has let a contract for an addition 55x75 feet, 1-story, to increase its foundry and machine shop capacity.

SAN ANTONIO, TEX.—McKee Motor Co. has been formed with $30,000 capital to operate a garage and repair shop, by J. E. Jarrott, J. D. McKee and Frank A. Winerich.

TRINIDAD, TEX.—Texas Power & Light Co. contemplates erecting a new power plant here. C. E. Calder is president.

ANACORTES, WASH.—Fidalgo Pulp Mfg. Co. has started preliminary work on construction of six buildings, including machine shops.

MILLWOOD, WASH.—Construction of a $130,000 paper mill for the Inland Empire Paper Co. will be started in March, contract having been awarded to the Austin Co., Dexter-Horton Bldg., Seattle.

SEATTLE—Best Universal Lock Co. has started operations in plant at 1121 Post street.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 46.00
Pennsylvania, No. 2	40.00 to 43.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	40.00 to 43.00
Illinois, No. 1	43.00 to 45.00
Illinois, No. 2	40.00 to 43.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	38.00 to 40.00
Missouri, high grade	46.00 to 49.00
Maryland, No. 1	48.00 to 50.00
Maryland, No. 2	43.00 to 45.00

SILICA BRICK

Pennsylvania	$40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	$65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	$48.00

SEATTLE—Seattle Forge Works, Inc. has been incorporated for $5000 by R. O. Sherman and W. H. Talmadge.

SEATTLE—Puget Sound Power & Light Co. plans building a substation at Twenty-first avenue and Madison street.

SEATTLE, WASH.—Hofius Steel & Equipment Co. will build a locomotive shop 60 x 220 feet at First and Spokane streets.

SEATTLE, WASH.—Doran Brass Foundry, 75 Horton street, will proceed at once with the construction of a frame addition, 66 x 92 feet.

SEDRO WOOLLEY, WASH.—H. E. Wilder, of this city, has the general contract for constructing the upper terminal building for the Superior Portland Cement Co., at Concrete, reinforced concrete, 60 x 200 feet. Subcontracts have been awarded of structural steel to the Isaacson Iron Works, Seattle, and reinforcing steel to the Pacific Coast Steel Co.

CHARLESTON, W. VA.—American Rail & Pipe Co. has been incorporated for $50,000 by A. P. Silverstein, Harry Silverstein and J. C. Pickens.

HUNTINGTON, W. VA.—Universal Tool Co. has been incorporated for $40,000 by Hartford McMullin, Lloyd F. Johnson and others.

HUNTINGTON, W. VA.—James J. Weller & Sons have the contract for constructing a garage here, for Max Bidderman, Fourth avenue.

PARKERSBURG, W. VA.—Donovan Boiler Works, has been incorporated with $300,000 capital, by Hugh Donovan and John George Bohn.

CLEVELAND—Kline Spring Co., Allan B. Kline, president, Babbitt road and New York Central tracks is planning to build a plant at 19100 Firwood avenue, brick, 50x100 feet, one story.

CLEVELAND—Ferbert Schorndorfer Co. has awarded contract to the Austin Co., Cleveland, for additions to its plant at Elmwood and Berea roads. A. J. Ferbert is president of the company. A 3-story addition will give 12,000 square feet of additional floor space.

ANTIGO, WIS.—A site at Field and Sixth avenues has been purchased by the Wirig Machine Works for a fireproof machine shop. The concern does a jobbing machine and repair business and makes and installs automobile and truck springs.

MARSHFIELD, WIS.—The Krasin Construction Co. has the general contract for erecting a $35,000 automobile building for the motor department of the Marshfield Hardware & Auto Co.

MILWAUKEE, WIS.—Super-Steel Products Co. has been incorporated with $50,000 capital, 500 shares at $100, by Walter A. Belau, Charles J. Wamser and Erwin E. Belau.

MILWAUKEE—Lloyd E. Pitner, 900 College avenue, Racine, Wis., has incorporated the Cinder Concrete Concrete Products Co. of Milwaukee, with W. C. Wehe, attorney, and others, to build and operate a series of plants manufacturing building blocks from cinders under a patented process. The capital stock is 5000 shares of common without par value and $15,000 preferred.

NEW LONDON, WIS.—Frank Schoenrock & Co. of this city will build a $30,000 fireproof garage and repairshop for Schroeder Bros. at Greenville, near New London.

PORT WING, WIS.—Architect F. E. Johnson, of Superior, Wis., is preparing plans for a public garage and repair shop here for Gidloff Bros. Motor Co.

GREEN BAY, WIS.—Bids will be asked

soon by the board of industrial education for the erection of a new central continuation school to cost $200,000. It will be located at Howard and Broadway streets.

MADISON, WIS.—Fox Motor Sales Co., 105 East Doty street, has bought a site 132 x 224 feet on which it will build a 2-story garage and machine shop 132 x 200 feet. Neil W. Fox is manager.

MADISON, WIS.—Burgess Battery Co., manufacturer of dry batteries, has let contracts for additional, 1-story, 65 x 250 feet, brick and concrete, steel sidewall, monitor sash and sawtooth roof. With machinery the the cost will be $100,000.

MILWAUKEE—Globe Electric Co., 14 Keefe avenue, will construct a 2-story adidtion, 35x 125 feet. The company manufactures radio equipment.

MILWAUKEE—A. C. Electric Co., 222 Fourth street, will build a new machine and service shop and office building at 718-722 Winnebago street. Klug & Smith, Mack block, have the general contract.

MILWAUKEE—The Super-Steel Products Co. of Wauwatosa, a suburb of Milwaukee, has been incorporated with a capital stock of $50,000 to manufacture fireproof windows, sash, doors and other sheet metal goods. The incorporators are Walter A. and Erwin E. Belau and Charles F. Wamser.

RACINE, WIS.—A. C. Gales, 1638 Villa street, will build a 2-story machine shop 40 x 80 feet. A. L. Flegel, Baker building, is architect.

RHINELANDER, WIS.—Solder and flux and soldering appliances are to be made here by the Parker Bros. Aluminum Solder Co., which has been incorporated with $50,000 capital by A. S. Forsyth, Arthur LaMotte and William G. Bolus.

RHINELANDER, WIS.—Bids are being asked by the board of education for a junior high school in four units to cost $150,000 each. Bids close Feb. 26. Mrs. Anna Moe is clerk of the board. Smith, Frandt & Reynolds, Manitowoc, Wis., are architects.

SHEBOYGAN, WIS.—Jenkins Machine Co. plans constructing 2-story, 47x150-foot plant of brick and steel on North Eighth street, for which Edward A. Juul, 211 Security Bank building, is architect. H. E. Studeman, 315 North Eighth street, is president of the Jenkins company.

Business in Canada

CALGARY, ALTA.—Foundry Products Co. propose to erect a new building at Ninth avenue and Sixth street, to cost $15,000.

VANCOUVER, B. C.—Expenditures of $1,500,000 will be made by American Can Co., Ltd., 534 Railway avenue, practically doubling capacity of the present plant. Of the total, $900,000 represents the cost of a reinforced concrete building adjoining the present plant.

BRANTFORD, ONT.—The Brantford Roofing Co., is rebuilding its factory recently destroyed by fire and will require some equipment. Cost $20,000.

CHATHAM, ONT.—Motor & Coach, Ltd., has been incorporated to manufacture and deal in automotive vehicles and parts, accessories, etc., with $50,000 capital, by William S. Goodeve, John G. Kerr, and James A. McNevin.

COLLINGWOOD, ONT.—T. C. Collins, who is having plans prepared for the erection of a sawmill here to cost $25,000, is inquiring for motor-driven equipment.

GUELPH, ONT.—The Callendar Foundry Co. plans building a foundry addition.

GUELPH, ONT.—The Guelph Paper Box Co., whose factory was recently damaged by fire will rebuild immediately and is in the market for machinery for the manufacture of office furniture, boxes, etc.

GUELPH, ONT.—The galvanizing department of the Page-Hersey Iron & Tube Co., was destroyed by fire with a loss of $10,000. Company will rebuild and will require equipment.

HAMILTON, ONT.—The Dominion Sheet Metal Co. is building an addition to its plant to cost $5500.

HAMILTON, ONT.—The Baynes Carriage Co. has let the general contract to the Canadian Contracting & Engineering Co., for alterations and additions to its plant.

PORT ARTHUR, ONT.—Thunder Bay Paper Co. has placed an order with the Port Arthur Shipbuilding Co., for a grinder, wet machine and a hydraulic press to cost $15,000. The company proposes to increase the capacity of its plant to 160 tons per day.

STRATHROY, ONT.—Hy-Lo Jacks, Ltd., J. Carruthers, president, is having plans prepared for a manufacturing plant here and is in the market for machinery and tools for the manufacture of hydrostatic jacks, hoisting machinery, etc.

TORONTO, ONT.—The American Radiator Co., Dufferin street, has awarded a general contract to Brown & Cooper, Ltd., 297 Carlton street, for rebuilding of its plant recently destroyed by fire.

TORONTO, ONT.—Exide Batteries of Canada, Ltd., 153 Dufferin street, has had plans prepared by Wm. Steele & Sons, 31 Bloor street, for addition to plant to cost $25,000. Considerable new equipment will be purchased.

DRUMMONDSVILLE, QUE.—The Southern Canada Power Co., Ltd., 20 St. Nicholas street, Montreal, Que., is having plants prepared for addition to water power development plant here.

New Trade Publications

CEMENT—A high temperature cement is described in a booklet issued by the Botfield Refractories Co., Philadelphia.

CO^2 RECORDER—Uehling Instrument Co., Paterson, N. J., has issued a circular on its CO^2 recorder, explaining its principle of operation, construction and method of installation.

HOISTS—Roeper Crane & Hoist Works, Inc., Reading, Pa., describes one type of its electric hoist in a leaflet well illustrated and containing data to aid buyers and users.

GRINDERS AND BUFFERS—A bulletin by the Hisey-Wolf Machine Co., Cincinnati, describes its line of combination grinders and buffers, including bench and floor stand types and data as to size, current and other specifications.

MOTORS—Synchronous motors for pumping are described and illustrated in pamphlet recently issued by the Electric Mfg. Co., Minneapolis. The various features are discussed and some of the users of this type of equipment are listde.

OIL BURNER—The performance of a low pressure oil burner on core ovens is described in a report of a survey made by A. C. Nielsen Co., Chicago, on equipment manufactured by the Hauck Mfg. Co., Brooklyn, N. Y.

WATER SOFTENER—A device for filtering and softening water for domestic and plant use, developed by the Graver Corp., East Chicago, Ind., is described in a booklet that goes into the subject fully and presents a number of illustrations.

SOOT BLOWERS—A clean boiler is an economy and a soot blower brings this about in large measure. The Marion Machine, Foundry & Supply Co., Marion, Ind., presents its line of blowers in a catalog just issued. Installation on various types of boilers is fully illustrated.

STOKERS—Presenting a number of types of stokers the Riley Stoker Corp., Worcester, Mass., covers a wide range with its products as presented in a well-illustrated booklet on stokers. It is intended only as an airplane view of the field and the types for various needs.

CRUCIBLE FURNACE—The Iler Co., Cleveland, has published a pamphlet describing and illustrating a new furnace for melting and refining metals and their alloys. The furnace burns either oil or gas and is so constructed that the crucible may be removed easily.

CHECK VALVES—The Smolensky Valve Co., Cleveland, has issued a bulletin describing a noiseless flanged check valve designed to eliminate water hammer on any pump where check valve is required. Illustrations show the various features of the device.

BALL MILLS—Pulverizing coal to obtain proper combustion is described in a catalog by the Bonnot Co., Canton, O., through the use of its ball mill equipment, including mill, classifier, air separator and exhaust. Details of construction and typical installations are presented.

ROLLER BEARINGS—Bearings designed for heavy duty are featured in a catalog by the American Roller Bearing Co., Pittsburgh. In addition to description of the construction and operation of the bearings and their application to various uses the catalog presents much engineering data of value.

WOODWORKING MACHINES—Installation photographs from the salient feature of a broadside issued by J. D. Wallace & Co., Chicago, in setting forth the utility of their woodworking machines, designed for pattern shop and similar work. It is printed in sepia and forms an attractive presentation of the saws, jointers, band saws and lathes.

SAFETY FIRST—Utilizing the best designs submitted by children of its workers in a safety first poster contest the Wheeling Steel Corp., Wheeling, W. Va., has issued a calendar selling the safety idea. Twelve pictures adorn the monthly leaves, the drawing suggesting it being reproduced and the photograph of the child making the suggestion.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount of $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis

THREADS AND COUPLINGS

Butt Weld

⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	28	12
¾ to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
3¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¼ to 4½-inch	5

SEAMLESS COLD DRAWN*

1-inch	51-off
1¼ and 1½-inch	43 off
1¾-inch	27 off
2 and 2¼-inch	18 off
2½ and 2¾-inch	28 off
3 and 3¼-inch	32 off
3½ and 3¾-inch	33 off
4-inch	37 off
4½ and 5-inch	29 off

SEAMLESS HOT ROLLED*

3 and 3¼-inch	34 off
3½ and 3¾-inch	35 off
4-inch	39 off

SEAMLESS STEEL MERCHANT BOILER TUBES*

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cents to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING*

Base Discounts

Carbon, 0.10 to 0.20 per cent	83 off
Carbon, 0.30 to 0.40 per cent	81 off
Carbon, 0.40 to 0.50 per cent	net price

Plus differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES*

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	15c
2-inch	11-gage	16c
2-inch	10-gage	17c
2¼-inch	12-gage	17c
2¼-inch	11-gage	18c
2¼-inch	10-gage	20c
3-inch	7-gage	35c
1½-inch	9-gage	15c
5⅜-inch	9-gage	55c
5½-inch	9-gage	57c

Plus usual extras for forming and for long lengths.

*Published discounts are subject to considerable shading, in some cases as much as five extra 5 per cents.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼ inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base.

Extras per Pound for Width or Diameter

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square feet, if ordered to weight—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼ inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{1}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 inches Wide

Plates less than ¼-inch gage to and including $\frac{1}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c

Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel ..... .10c

High tensile hull steel subject to U. S. Navy Dept., or equivalent specifications 1.00c

Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B.... 1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH or DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet..No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

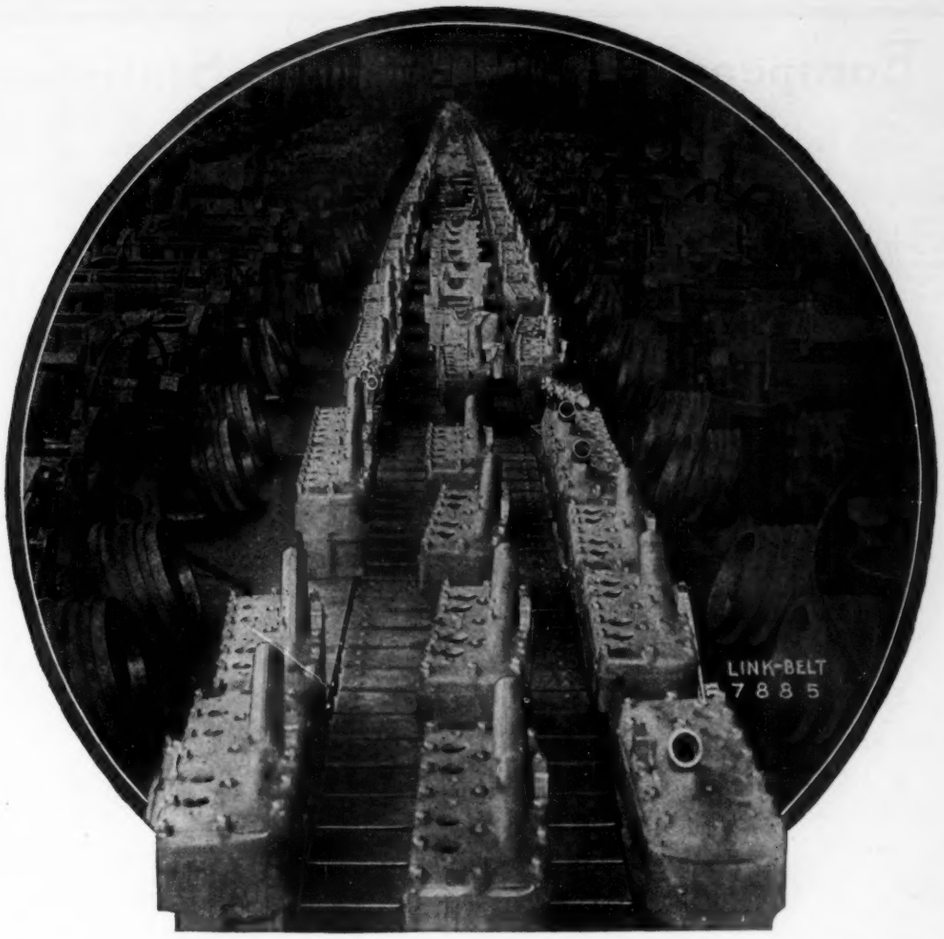
With not more than four straight cuts. (including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with reentrant angles)

Additional extra ..... .20c



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LINK-BELT

THIS YEAR LINK-BELT IS FIFTY YEARS OLD

European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	20,600	50,000
Monthly average 1920..	669,500	281,700	92,700	58,000
Monthly average 1921..	217,600	280,300	71,800	79,600
Monthly average 1922..	403,300	428,900	131,500	137,500
Monthly average 1923..	619,900	437,100	179,100	.....
1923				
January	567,900	478,600	157,800	139,500
February	543,400	300,800	149,000	86,500
March	633,600	311,200	167,300	93,900
April	652,200	345,000	169,600	94,400
May	714,200	387,300	163,500	84,300
June	692,900	440,000	169,300	88,400
July	655,100	429,600	184,400	120,900
August	599,800	478,700	195,800	132,900
September	558,600	474,300	191,100	124,900
October	595,700	506,200	193,400	131,900
November	598,200	527,800	201,900	135,700
December	626,900	555,800	206,100	150,800
1924				
January	636,600	576,900	205,700	159,700
February	612,700	581,100	.....	162,700
March	668,600	629,500	226,900	183,900
April	618,400	641,100	235,800	182,700
May	650,900	648,100	242,700	181,400
June	607,800	628,900	.....	.....
July	615,600	626,200	243,500	.....
August	588,900	643,400	240,500	.....
September	569,200	631,400	238,700	.....
October	586,400	649,600	242,400	.....
November	583,500	623,900	213,200	.....

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
Average monthly 1921..	137,100	38,500	43,300	.....
Average monthly 1922..	73,500	64,300	42,000	199,000
Average monthly 1923..	110,233	58,700	45,500	122,600
1923				
January	128,900	55,800	45,100	191,300
February	122,700	63,800	40,000	82,500
March	111,000	38,000	35,200	93,200
April	115,400	44,200	32,800	143,900
May	82,200	57,000	34,100	127,400
June	105,100	55,700	39,600	134,000
July	114,100	57,600	42,200	117,800
August	115,100	53,500	52,700	212,800
September	116,400	52,500	46,900	171,300
October	106,300	65,400	39,700	158,300
November	97,500	110,100	59,800	138,800
December	108,100	70,800	77,900	.....
1924				
January	141,600	49,100	50,400	101,700
February	.....	59,400	50,900	126,600
March	165,200	58,800	66,500	189,600
April	198,900	64,800	60,400	75,700
May	300,100	50,300	53,000	.....
June	175,500	53,500	49,300	.....
July	201,200	61,400	38,200	.....
August	173,700	66,400	33,100	.....
September	207,200	66,100	44,000	.....
October	241,300	52,500	38,800	.....
November	213,000	.....	.....	.....

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxembourg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	755,600	250,200	101,300	49,000
Monthly average 1921..	302,100	254,500	65,000	62,300
Monthly average 1922..	486,000	372,000	128,200	114,000
Monthly average 1923..	707,400	408,600	194,483	98,250
1923				
January	634,100	401,400	159,800	121,500
February	707,100	285,300	154,700	72,400
March	802,500	310,900	181,100	78,500
April	749,400	349,200	167,700	77,600
May	821,000	387,300	169,100	72,300
June	767,700	420,700	186,000	73,200
July	639,500	393,300	178,900	94,200
August	567,500	445,300	209,300	108,000
September	695,100	439,500	191,200	104,600
October	702,100	469,200	212,800	124,400
November	749,500	484,800	213,900	119,700
December	653,300	517,300	209,300	132,600
1924				
January	694,300	532,600	227,400	144,300
February	.....	546,000	.....	148,600
March	816,900	564,000	237,300	153,600
April	711,500	558,600	237,000	154,400
May	809,700	589,100	246,600	149,400
June	651,500	546,600	.....	.....
July	693,300	556,000	241,200	.....
August	527,500	572,600	234,400	.....
September	645,000	589,000	240,900	.....
October	678,500	599,600	252,400	.....
November	674,300	549,200	213,700	.....

Exports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	416,900
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	270,900	74,600	74,300	143,600
Average monthly 1921..	141,700	132,700	75,900	176,000
Average monthly 1922..	283,400	164,000	143,000	209,700
Average monthly 1923..	359,975	173,700	208,466	102,900
1923				
January	353,400	158,500	202,200	212,900
February	317,600	236,500	162,200	183,500
March	368,100	139,200	200,000	115,100
April	387,000	120,600	192,000	105,100
May	424,500	40,000	181,200	91,700
June	365,100	125,200	184,500	63,100
July	307,700	173,300	217,200	91,400
August	323,900	187,600	210,500	103,300
September	334,000	234,000	211,110	90,900
October	388,600	227,900	259,000	87,300
November	394,900	214,200	210,900	90,300
December	354,900	227,400	270,800	.....
1924				
January	337,400	211,700	.....	86,900
February	.....	269,200	240,400	104,000
March	288,200	303,900	290,600	103,000
April	336,800	307,000	294,400	87,700
May	406,900	224,700	327,000	.....
June	324,400	226,300	289,100	.....
July	339,700	166,200	266,900	.....
August	301,100	181,600	278,300	.....
September	263,800	179,500	291,700	.....
October	309,200	213,500	286,600	.....
November	311,600	.....	.....	.....

Note—Belgian figures include Luxembourg since May 1, 1922.
Export and import figures do not include scrap.

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1924		
December	69,281	129,376
November	34,300	124,464
October	40,877	158,553
September	45,216	135,894
August	44,928	136,025
July	30,410	138,845
June	60,474	172,982
May	66,805	168,172
April	50,975	132,739
March	39,279	124,762
February	42,054	168,191
January	26,677	251,284
Total	556,733	1,805,064
1923		
December	27,012	179,215
November	26,534	186,770
October	29,884	154,079
September	36,612	173,664
August	45,432	163,010
July	53,448	170,259
June	68,019	172,747
May	75,891	204,988
April	77,909	179,159
March	106,206	165,624
February	67,707	135,182
January	120,080	124,444
Total	734,734	2,009,141
1922		
December	96,358	154,087
November	152,250	124,004
October	184,202	131,542
September	76,393	128,370
August	49,054	144,264
July	62,426	157,027
June	39,154	216,298
May	23,098	229,616
April	18,720	197,562
March	12,774	206,474
February	11,535	133,333
January	13,404	155,962
Total	643,010	1,988,539

Yearly Totals		
1921	117,105	2,156,818
1920	448,833	4,920,913
1919	327,490	4,405,281
1918	168,225	5,372,424
1917	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687